DENON

Hi-Fi Component

SERVICE MANUAL

STEREO CASSETTE TAPE DECK

MODEL DRM-700A

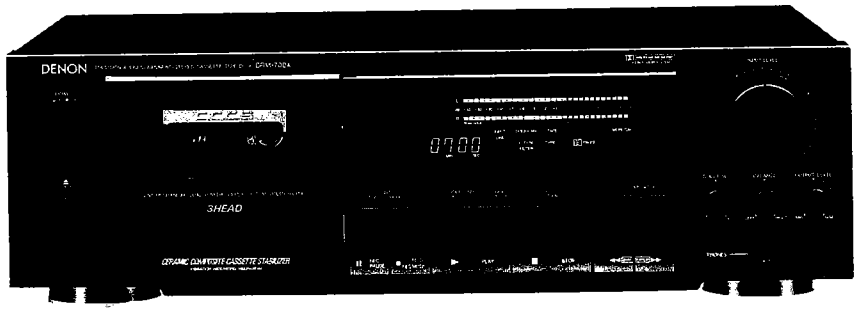
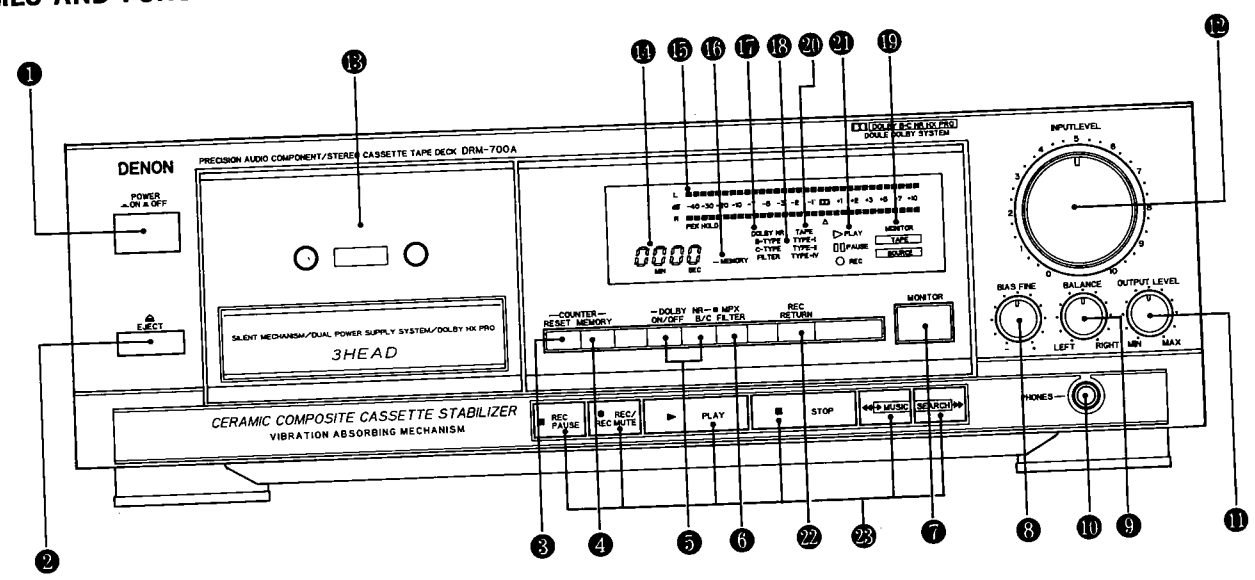


TABLE OF CONTENTS

OPERATING INSTRUCTIONS ..... 2～11
SPECIFICATIONS 11
BLOCK DIAGRAM 12
LEVEL DIAGRAM 13
DISASSEMBLY INSTRUCTIONS ..... 14～15
ADJUSTING AND CHECKING THE MECHANISM SECTION ..... 16～17
ADJUSTING THE ELECTRICAL SECTIONS ..... 17～19
PARTS LIST OF EXPLODED VIEW 20
EXPLODED VIEW OF CABINET AND CHASSIS GROUP 21
PARTS LIST OF MECHANISM EXPLODED VIEW/4U-1817/4U-1823 22
EXPLODED VIEW OF MECHANISM 23
PARTS LIST OF 4U-1816 24
WIRING DIAGRAM 25
SCHEMATIC DIAGRAM ..... 26～27
P.W.BOARD OF 4U-1816 28
P.W.BOARD OF 4U-1817/4U-1823 29
SEMICONDUCTORS 30

NIPPON COLUMBIA CO., LTD.

NAMES AND FONCTIONS OF PARTS



❶ POWER switch
Controls the supply of AC power to the deck. One push turns the deck on, a second push turns it off. The deck remains in a stand-by (non-operative) mode for approximately 2 seconds after it is switched on.

❷ EJECT button
Press this button to eject the cassette. When the deck is operating (tape is running), press the stop (■) button first to stop the tape transport; then press the EJECT button.

❸ COUNTER RESET button
Operation of the button resets the counter to all zero.

❹ MEMORY STOP button
During rewinding operations, the tape will stop at the "0000" counter point automatically when this button is pressed in.

❺ DOLBY NR button
When the left-side DOLBY NR button is pressed once with DOLBY NR being at the "ON" state. DOLBY NR B-TYPE is preferred and turned on. Every time when the right-side B/C button is pressed, B-TYPE and C-TYPE are selected alternatively.

❻ MPX FILTER button
The MPX FILTER button should be used to prevent interference with the Dolby NR circuit when making Dolby NR encoded recordings of FM stereo programs. When making Dolby NR encoded recordings from any program source other than FM stereo, leave this button in the "OFF" position.

❼ MONITOR button
The SOURCE position of this button allows you to monitor the source program before it is recorded. The TAPE position of this button is used for tape playback monitoring or simultaneous monitoring during recording.

❽ BIAS control
(for NORMAL CrO_2 and METAL tape)
Adjust the bias according to the tape characteristics. Standard biasing is obtained at the center click-stop position.

❾ BALANCE control
This is the knob to adjust the recording level balance between the left and right channels. Turn it counter-clockwise to reduce the right channel's level and clockwise to reduce the left channel's. Usually, put the knob at the center click position.

❿ PHONES jack
For private music enjoyment without disturbing others, or for monitoring a recording, a set of headphones may be plugged in. Impedance should be from 8 to 1200 ohms.

⓫ OUTPUT LEVEL control
This control adjusts playback, recording monitor, and headphones output levels for the both channels simultaneously.

⓬ INPUT LEVEL control
The recording input level is adjusted by this knob. The levels in the left and right channels can be changed simultaneously.

⓭ Cassette compartment cover
If this compartment cover is not closed completely, the deck's transport controls will remain inoperative.

⓮ LINEAR TAPE COUNTER
Tape-passage is indicated digitally in minutes and seconds.

⓯ FLUORESCENT PEAK METERS
These meters indicate recording or playback peak levels for each channel For peak levels exceeding −7dB, the Auto Peak Hold Feature holds the peak level reading for approximately 1 seconds.

⓰ MEMORY indicator
This indicator light is interlocked with the memory stop button. (MEMORY)

⓱ NR SYSTEM indicator
This indicator light is interlocked with the DOLBY NR button and informs the user that DOLBY NR is in use as well as which B-TYPE or C-TYPE.

⓲ FILTER indicator
This indicator light is interlocked with the MPX FILTER button. (FILTER)

⓳ MONITOR indicator
This indicator light is interlocked with the MONITOR button to inform the use of the selected monitoring source— TAPE or SOURCE .

⓴ TAPE SELECT indicator
This indicator light is interlocked with the Auto Tape Select feature which automatically adjusts the deck to the type of tape in use. (TYPE Ⅰ TYPE Ⅱ or TYPE Ⅳ).

㉑ PLAY, PAUSE and REC indicator
When the PLAY, REC PAUSE and REC buttons are pressed, this indicator will light.

㉒ REC RETURN Button
When this button is pressed at the recording state, the tape is rewound to the starting point. When the starting point is automatically reached, the record standby mode (rec pause state) comes.

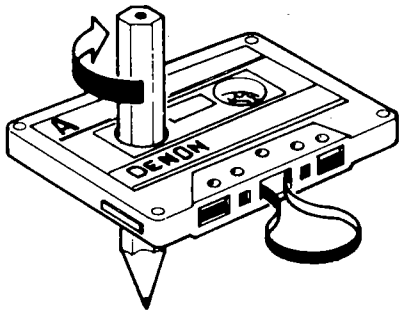
㉓ Tape transport controls

▶ PLAY	PLAY button	Press to playback tape.
■ STOP	STOP button	Press to stop tape in any mode.
◀◀	REW button	Press for fast rewind.
▶▶	FF button	Press for fast forward tape winding.
● REC/REC MUTE	RECORD/MUTE button	To begin recording, press the RECORD and PLAY buttons simultaneously. If only the RECORD button is pressed, the deck is placed in the REC PAUSE (record standby) mode. When this button is pressed under the REC PAUSE state, the mode shifts to the Auto Rec Mute. When this button is pressed for making a non-recorded part between two melodies, about 5 sec of non-recorded part can automatically be created.
❚❚ REC PAUSE	REC PAUSE button	Press this button if you want to change from the rec mute or recording state into the rec pause state. "REC PAUSE" is effective during "RECORDING" only.

CASSETTE TAPE

■ Handling Precautions

- C120 cassettes
  C120 cassettes are not recommended as they use a very thin tape base which may become tangled around the capstan or pinchroller.
- Tape slack
  This cassette deck incorporates an automatic tape slackness preventive mechanism, but it can not prevent such a slackness as shown below. Remove it with a pencil or the like prior to use.

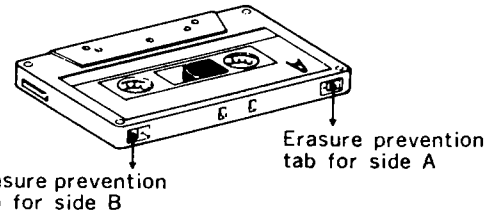


■ Storage Precautions

- Do not store cassette tapes in a place where they will be subject to:
  - Extremely high temperature or excessive moisture
  - Excessive dust
  - Direct sunlight
  - Magnetic fields (near TV set or speakers)
- To eliminate tape slack, store your cassettes in cassette cases with hub stops.

■ Accidental Erasure Prevention

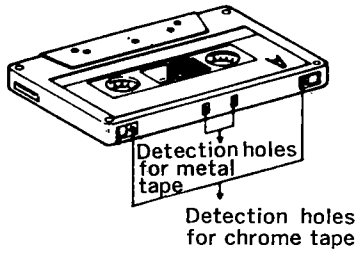
- Every cassette has erasure prevention tabs for each side. To protect your valuable recorded tapes from accidental or inadvertent erasure, remove the tab for the appropriate side with a screwdriver or other tools.
- To record on a tape with the erasure prevention tabs removed, cover the tab holes with plastic tape.



AUTO TAPE SELECT FEATURE

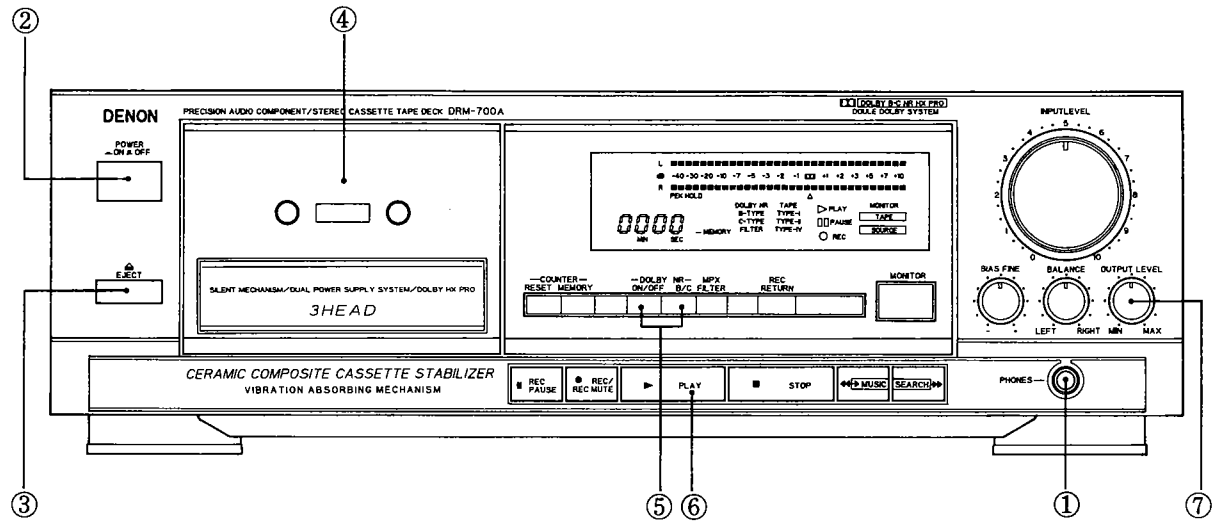
This Stereo Cassette Deck contains an Auto Tape Select feature which automatically selects the optimum bias and equalization for the tape in use. This is accomplished by detection of tape type detection holes in the cassette housing.

- If a tape without tape type detection holes is used, the deck will automatically adjust itself for normal tapes.



PLAYBACK

- Switch on your amplifier or receiver.
- Set the TAPE MONITOR switch on your amplifier or receiver to the TAPE position
- Operate the deck in numerical order as illustrated below:



① **PHONES**
Playback sound is fed into the headphones set.

② **POWER**
Push the switch to turn "ON" (⏏) the power.

③ **EJECT**
Press the EJECT button to open the cassette compartment.

④ **Cassette Compartment Cover**
Load the cassette tape

⑤ **DOLBY NR**
For recordings made without Dolby NR, set to "OFF".
For recordings made with Dolby B NR, set to "B".
(The B-TYPE indicator will light up.)
For recordings made with Dolby C NR, set to "C".
(The C-TYPE indicator will light up.)

⑥ **▶PLAY**
Push the PLAY KEY (The ▷PLAY indicator will light up).

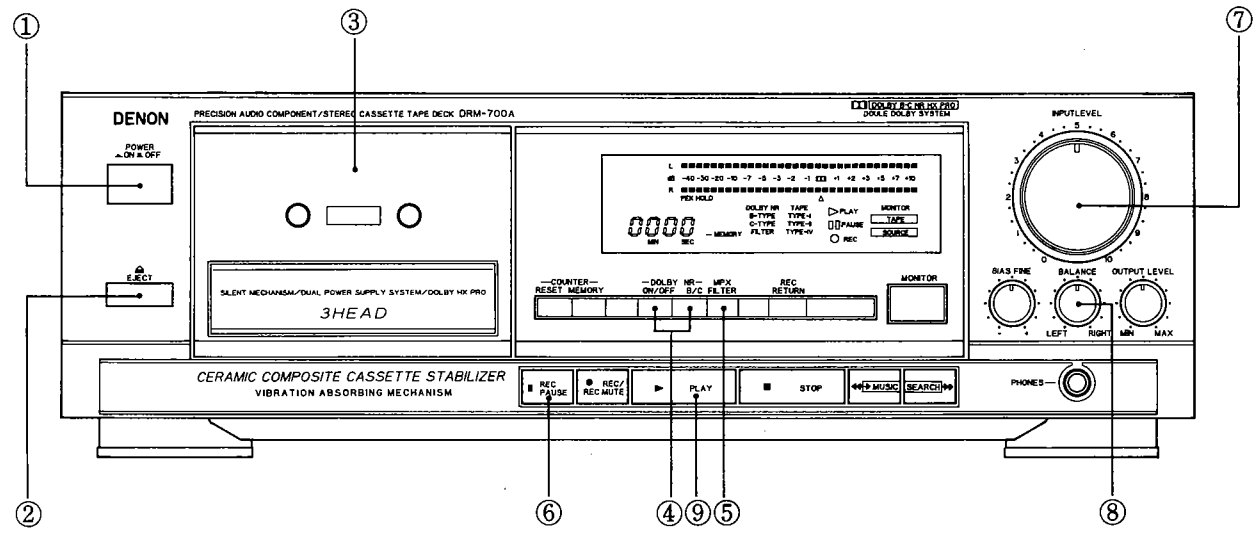
- When playback is finished, press the stop (■STOP) button.
- To restart the tape, press the PLAY (▶PLAY) button.
- If different types of Dolby Noise Reduction are used for record and playback, playback response will be adversely effected.

⑦ **OUTPUT**
Check to make sure the OUTPUT LEVEL.

Note :
If the power switch is turned OFF in either the recording or playback mode, the cassette cannot be removed, even if the EJECT button is pressed. Please turn the power switch ON again, and then in stop mode, press the EJECT button to remove the cassette tape.

RECORDING

- Switch on the source component (tuner, amplifier, etc.).
- Set the TAPE MONITOR switch on your amplifier or receiver to the SOURCE position.



① **POWER**
Push the switch to turn "ON" (▬) the power.

② **EJECT**
Press the EJECT button to open the cassette compartment.

③ **Cassette Compartment Cover**
(Make sure the erasure prevention tab has not been removed from the cassette shell half.)

④ **DOLBY NR**
Set, in accordance with the recording to be made. For recordings without Dolby NR, set to "OFF". For recordings with Dolby B NR, set to "B" (The B-TYPE indicator will light up). For recordings with Dolby C NR, set to "C" (The C-TYPE indicator will light up). Future mistakes during playback can be avoided if the cassette is so marked for Dolby NR encoded recordings.

⑤ **MPX FILTER**
Button it "ON" for the DOLBY NR recording of FM broadcasts (The FILTER indicator will light up).

⑥ **●REC/REC MUTE**
When pressed, the deck goes into the record standby mode. The ○REC and ▯▯ PAUSE indicators will light. Initial setting of recording levels should be made in the record standby mode.

⑦ **INPUT LEVEL**
Used to set the recording level.

⑧ **BALANCE**
Adjust the recording level balance between the left and right channels.

⑨ **▶PLAY**
When pressed, the recording will start.
(The ▷PLAY and ○REC indicators will light up).

- When recording is finished, press the STOP (■STOP) button.

Caution :
Be careful not to erase important recordings by mistake. Mis-erasing can be avoided by following the two steps below :
1. If the PLAY (▶PLAY) button is pressed while the ○REC indicator is on, the tape will be recorded.
2. If the PLAY (▶PLAY) and RECORD (●REC) button are pressed at the same time, the tape will be recorded.

PROPER RECORDING LEVEL

A too high recording level can saturate the tape and cause distortion. On the other hand, if recording levels are set too low, soft passages will be marked by residual noise. Proper recording level is the single most important factor for making well balanced recordings.

Guideline for maximum recording level

Normal tape (TYPE Ⅰ)	+1 dB levels on peaks
CrO_2 tape (TYPE Ⅱ)	+3 dB levels on peaks
Metal tape (TYPE Ⅳ)	+5 dB levels on peaks

Note : Optimum recording levels can differ depending on program sources or the type of tape used. Make trial recordings using the simultaneous monitoring. Refer to the description under "MONITOR" BUTTON.

■ Meter reading difference between L and R channels

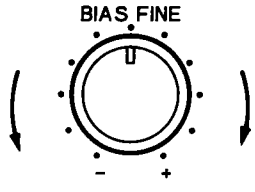
The left and right channels readings of the PEAK METER can differ due to variations in input signal levels. In such cases, adjust the individual channels of the BALANCE control until identical meter readings are obtained for both channels.

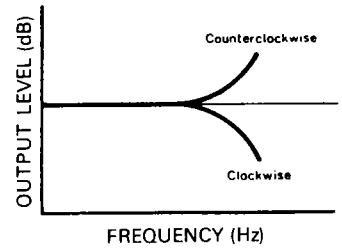
RECORDING BIAS ADJUSTMENT

For best recording results, monitoring during the recording process and comparing various recordings using your own judgement are essential.

The DRM-700A is equipped with a bias adjustment control to assist you in setting the proper bias for different types and brands of recording tape. At the center-stop position, the deck is set for a reference bias level for NORMAL, CrO_2 and METAL tapes. If the resulting recording in this position has too much or too little high frequency content, varying the bias adjustment control can be useful to achieve betterresults.

If the high frequencies (treble sounds) are to be boosted, turn the bias control counterclockwise to decreases bias current. If distortion is of more concern than high frequency response, turn the control clockwise to increase bias current, By the use of this control, you can record tapes with response that matches your personnal listening tastes.





REC/REC MUTE BUTTON

REC/REC MUTE is the DENON's unique and convenient function. By using this button, it is easily possible to insert a suitable space (the non-recorded part) between two melodies.

1. When you want to make about 5 sec of non-recorded part after the recording state:
   Press the REC/REC MUTE button. The recorder will automatically create about 5 sec of non-recorded part and will stay in the recording standby state.
2. To create about 5 sec of non-recorded part after the standby state:
   Press the REC/REC MUTE button, and the recorder will enter the non-recording state, automatically create about 5 sec of non-recorded part and stay in the standby state.
3. To cancel the non-recording state (the REC MUTE state):
   Press the REC PAUSE button, and the recorder will cancel the non-recording state and will stay in the standby state.
4. To extend the non-recording state (the REC MUTE state) for further 5 sec or more:
   Press the REC/REC MUTE button, and the non-recorded part will automatically be extended for another 5 sec.

MUSIC SEARCH SYSTEM

This device is a convenient system which detects the non-recorded part of more than 4 seconds between melodies, cues the next melody while the present melody is being reproduced or automatically detects the beginning of the melody now being reproduced and makes it into the reproduceable state.

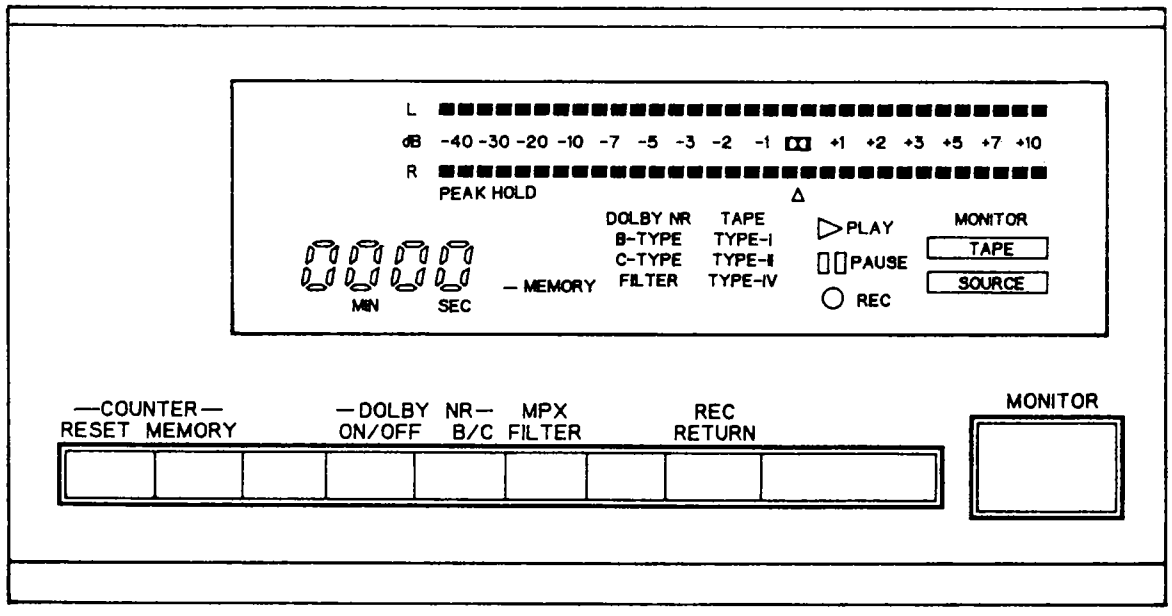
1. For cueing the next melody while the present melody is being reproduced:
   At PLAY mode, depress the PLAY button and the FF button simultaneously. This device will detect the interval between melodies with the CUE state on, automatically become the PLAY mode and begin performing the next melody.
2. For hearing again the melody being reproduced:
   At PLAY mode, depress the PLAY button and the REW button simultaneously. This device will detect the interval between melodies with the REVIEW state on, automatically become the PLAY mode, detect the beginning of the melody now being performed and play it from the first again.

Note: Note about MUSIC SEARCH action:

MUSIC SEARCH is a function which operates by detecting a comparatively long non-recorded part on the tape. Therefore, MUSIC SEARCH may not operate normally in the following cases.

- Sound on the tape is interrupted by speech or conversation.
- Long periods of pianissimo (softly played music) or non-recorded intervals occur on the tape.
- The tape has picked up noise in a non-recorded interval.
- Non-recorded intervals on the tape are less than 4 seconds in length.
- Noise-emitting electrical appliances are in operation nearby. i.e.; Electric razors, drills, refrigerators, etc.

TAPE COUNTER AND MEMORY STOP



1) Operation of the Linear Tape Counter

(1) Press the RESET button to reset the counter to "0000".

(2) By using the PLAY, FF, or REW function, the reading of the counter indicate in minutes and seconds. This linear counter is set by the basis of C-90 type.

Note

- There may be errors between the counter indication and the real recording time. This is inevitable to some extend due to the fact the counter indicates time during FF and REW as those during recording and playback.
  The time of the error itself is different among tapes used.
- During recording and playback operations, the counter is useful for noting the location of existing programs or positions where recording is to be started.

2) Operation of MEMORY STOP

(1) During recording or playback operations, MEMORY STOP can be used to locate a particular point on the tape. At the desired point, reset the counter to "0000". With the MEMORY STOP button in the "ON" position, the deck will stop at the "0000" point (actually "5955" and "0000") during REWIND operations.

(2) The MEMORY indication will light when this function is activated.

(3) Notes:

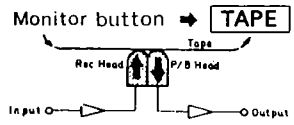
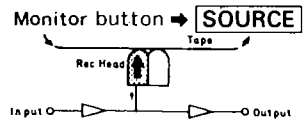
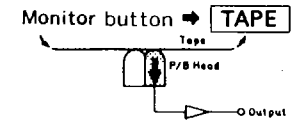
- When the power is turned "OFF", this function is automatically deactivated.
- The MEMORY STOP is accurate to −5 on the counter, and will stop between "5955" and "0000".
- The MEMORY STOP is released by pressing the EJECT button.
- The MEMORY STOP does not operate during the REC RETURN.

3) Display Back-up

(1) The functions DOLBY NR, MPX FILTER, MONITOR and the counter content are protected by 24-hour memory back-up. After 24 hours, DOLBY NR and MPX FILTER are set to "OFF", MONITOR is reset to "TAPE" and the counter content is reset to "0000".

MONITOR BUTTON

This Stereo cassette deck uses a three-head system which permits simultaneous "off-the-tape monitoring" during recording. Incidentally, as this Stereo Cassette Deck adopts an automonitor system, TAPE or SOURCE can automatically be activated according to the operation conditions. These modes can also be activated manually.

Recording	Monitor button ➡ TAPE 	The signal recorded on the tape is monitored simultaneously "off-the-tape". This monitoring mode enables you easy check for optimum recording levels. In the TAPE mode, the FL PEAK METER indicates the signal levels played back off-the-tape.
	Monitor button ➡ SOURCE 	The SOURCE position enables you to monitor the input source signal before it is recorded on the tape. Using the FL PEAK METER, this mode is convenient for setting recording levels or input level monitoring during recording.
Playback	Monitor button ➡ TAPE 	During playback, the MONITOR button must be placed in the TAPE position. If it is set in the SOURCE position, the signal from the tape won't be heard.

DOLBY C NOISE REDUCTION SYSTEM

- The Dolby noise reduction system substantially reduces the tape background noise (hiss) inherent in the cassette medium. Dolby B NR is most widely in use. However, Dolby C NR is a much more recent development and represents a significantly improvements over Dolby B NR.
- Tape background noise consists primarily of high frequency information which is particularly annoying during soft passages. The Dolby NR system increase the level of low volume mid and high frequency signal during recording and reduces the level of these signals by an identical amount during playback. As a result, the playback signal is identical to the original source signal, but the level of background noise generated by the tape is greatly reduced.
- The operating principle of Dolby C NR is similar to that of B except for the encoding/decoding response curves. The noise reduction effect obtained by Dolby C NR is up to 20dB, compared to 10dB with Dolby B NR. In addition, Dolby C NR uses an antisaturation network and spectral skewing circurity, and significantly improves the dynamic range in the mid to high frequencies.

DOLBY HX-PRO HEADROOM EXTENSION SYSTEM

This deck is equipped with the DOLBY HX-PRO headroom extension system. Since the system functions automatically during recording, no switching operation or adjustment is required. The system is effective with any type of Normal, CrO_2 or Metal tapes.

The Dolby HX-PRO headroom extention system functions during recording to lift up the saturation level in the treble range. Therefore, most of the treble range components distorted or lost during recording on conventional cassette decks are more faithfully recorded on the new DRM-700A cassette deck.

Features of the DOLBY HX-PRO headroom extension system

(1) Performance of Normal and CrO_2 tapes can be upgraded closer to that of Metal tapes.
(2) The dynamic range in the treble is improved significantly.
(3) Since no decoding in playback is necessary, the improvement can be obviously heard on any hi-fi playback system including portable components and car systems.
(4) The system functions whether the Dolby B/C NR is engaged or not.

MAINTENANCE

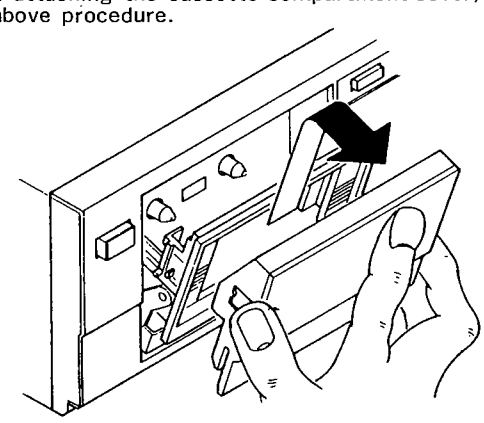
■ Removing the cassette compartment cover

It will be more convenient if the cassette compartment cover is removed during the cleaning of the pinchroller and heads, or during demagnetizing of heads.

Follow these procedures:

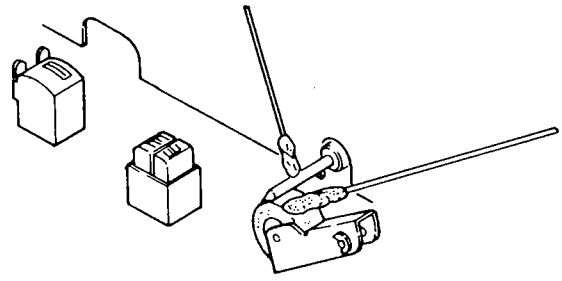
1. Press the EJECT button to open the cassette compartment.
2. Hold only the cover of the cassette compartment and pull it up. The compartment cover is removed from the front.

When attaching the cassette compartment cover, reverse the above procedure.



■ Cleaning the pinchroller and the capstan

If the pinchroller or the capstan accumulate dust, tape transport may become unstable resulting from slippage during recording or playback. The tape can also be damaged by being rolled up around the capstan.
Clean them with a cotton swab or a soft cloth moistened with cleaning solution (such as alcohol).

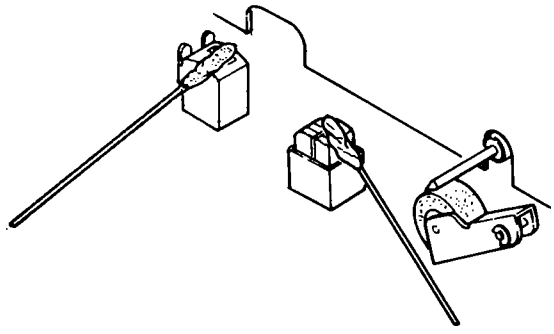


■ Head Cleaning

After long usage, tape coating or dust may adhere to the heads causing deterioration of sound. Clean them regularly. Use a cotton swab moistened with cleaning solution (such as alcohol).

Note:

1. Some cleaning cassettes on the market have a strong abrasive effect and scratch the heads. Use cotton swabs instead of cleaning cassettes.
2. Since the use of metal tapes is apt to collect more dust on the heads, clean the heads more often to enjoy optimum sound.



■ Demagnetizing the heads

The heads may become magnetized after long usage or by having a strongly magnetized object brought near them. The result is a generation of noise, loss of the high frequency range, or erasing the treble components of pre-recorded tapes and adding noise.
Demagnetize the heads on a regular basis.

■ Procedure

1. Be sure to turn "off" the power supply.
2. Turn the demagnetizer "on" while it is more than 30cm away from the heads. Bring the demagnetizer near the heads and slowly move it in a small circle four or five times.
3. Slowly move the demagnetizer away from the heads and turn "off" the power of the demagnetizer when it is about 30cm away from the heads.

SYMPTOMS OFTEN MISTAKEN AS BREAKDOWNS

Make sure of the followings before you consider as any malfunctions:

1. **Are all the connections correct?**
2. **Is the set being operated correctly in accordance with the operating instructions?**
3. **Are the speakers and amplifiers functioning correctly?**

If the tape deck still does not function properly, check it again, using the check list below. If the symptom does not correspond to the check list, please contact your DENON dealer.

Symptom	Cause	Remedy
Tape does not run.	Power cord is off. Tape is completely wound up. Tape is loose. Cassette is not loaded properly. Defective cassette.	Check power cord. Rewind tape. Tighten tape with pencil, etc. Load cassette properly. Replace cassette.
Tape is not recorded when recording button is pressed.	No cassette is loaded. Erase prevention tab is broken off.	Load cassette. Cover hole with plastic tape.
Sound is warbled or distorted.	Heads, capstan or pinchroller are contaminated. Tape is wound too tight. Recording input level is too high. Tape is worn out and has "drop-outs".	Clean them. Fast forward or rewind to loosen tape winding. Adjust recording input level. Replace tape.
Excessive noise.	Tape is worn. Heads, capstan or pinchroller are contaminated. Heads are magnetized. Recording input level is too low.	Replace tape. Clean them. Demagnetize heads. Adjust recording input level.
High frequency (treble) is emphasized.	Dolby NR button is set improperly.	Set Dolby NR button properly.
High frequency (treble) is lost.	Heads are contaminated. Tape is worn.	Clean them. Replace tape.
When a CrO_2 or metal tape is placed in the deck, a different tape indicator comes on.	The cassette housing is of an older design without tape type detection holes.	Use the latest cassette with tape type detection holes.
The cassette tape cannot be removed.	If the power switch is turned off in either the recording or playback mode, and the unit is stopped, there may be case when the cassette cannot be removed, even if the EJECT button is pressed.	Turn the power switch ON again, and then press the stop (■) button. Then, in the stop mode, press the EJECT button to remove the cassette tape.

SPECIFICATIONS

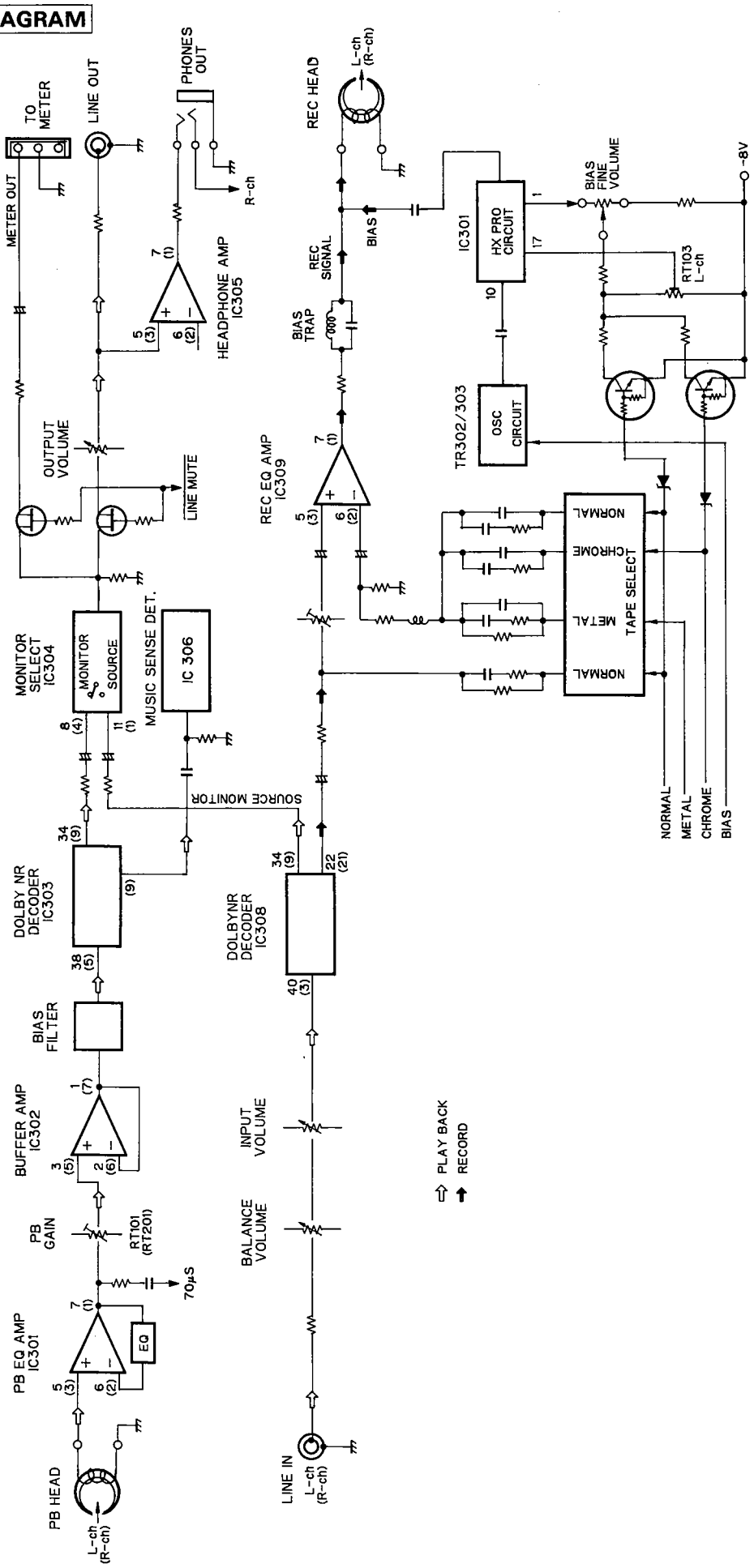
- Type .....Vertical tape loading 4-track 2-channel stereo cassette deck
- Heads.....Record & Playback (combination head) × 1
  Erase (Double gap ferrite head) × 1
  Motors.....Capstan (DC servo motor) × 1
  Reel (DC motor) × 1
  Actuator (DC motor) × 1
- Tape Speed.....4.8 cm/sec.
- Fast forward, rewind time.....Approx. 100 sec. with a C-60 cassette
- Recording bias.....Approx. 105 kHz
- Overall S/N ratio (at 3% THD level)..Dolby C NR on ... more than 74 dB (CCIR/ARM)
- Overall frequency response.....20~20,000 Hz ±3 dB (at −20 dB METAL tape)
- Channel separation.more than 40 dB (at 1 kHz)
- Crosstalk .....more than 65 dB (at 1 kHz)
- Wow & flutter.....0.045% wrms, ±0.1% w. peak
- Inputs
  line.....80 mV (−20 dBm) input level at maximum
  Input impedance : 50 kohm unbalanced
- Outputs
  line.....620 mV (0 dB) output level at maximum (with 47 kohm load, recorded level of 200 pwb/mm)
  headphone .....1.2 mW output level at maximum (optimum load impedance 8 ohm~ 1.2 kohm)
- Accessories.....Parallel pin cord × 2
  Mini-plug cable × 1
- Power supply .....50 Hz/60 Hz compatible, voltage is shown on rating label
- Power consumption.19 W
- Dimensions .....434 (W) × 135 (H) × 303 (D) mm
- Weight.....5 kg

■ **Above specifications and design styling are subject to change for improvement.**

■ Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.
"DOLBY", the double-D symbol ⊡⊡ and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

Best results will be obtained with use of DENON DX and HD Series cassette tapes.

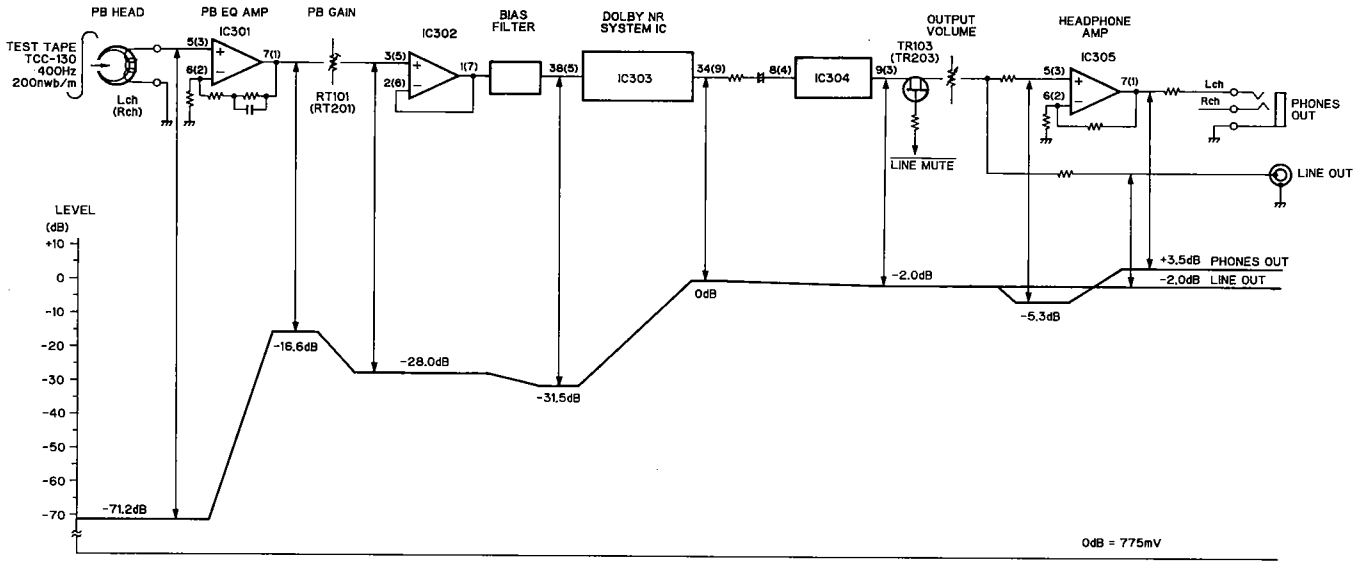
BLOCK DIAGRAM



LEVEL DIAGRAM

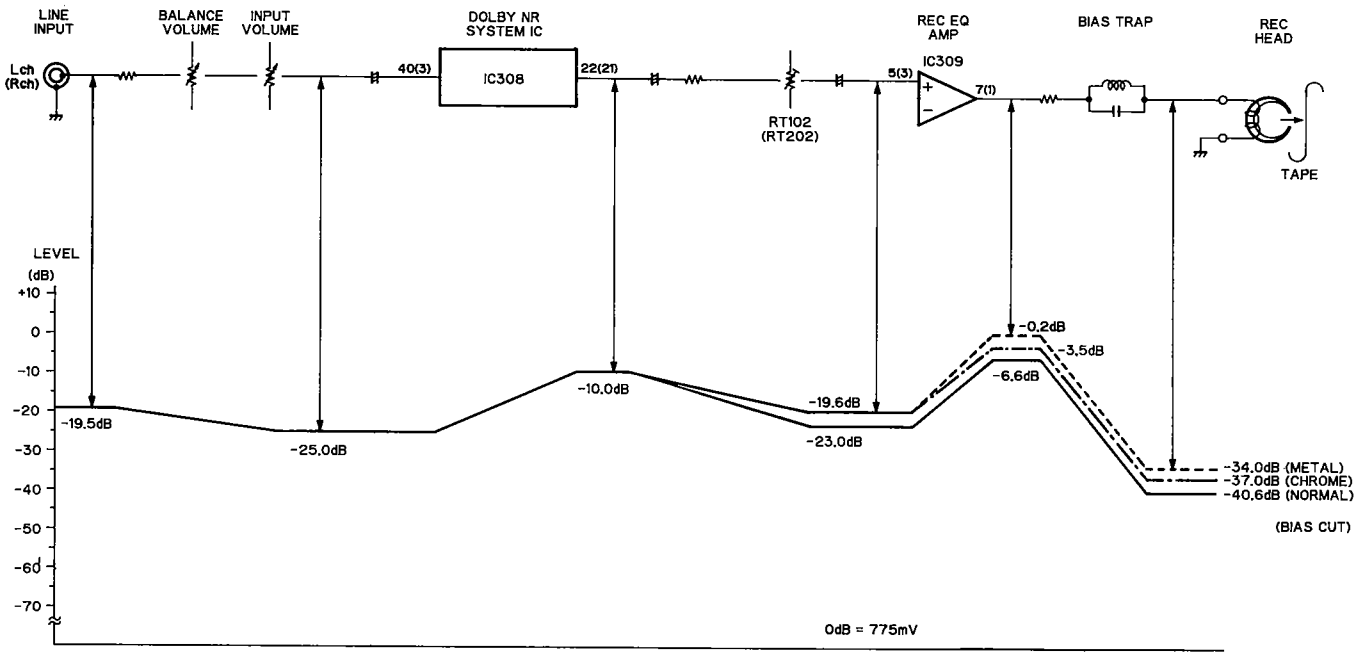
PLAYBACK SYSTEM

TCC-130 DOLBY B-TYPE
400 Hz 200 nwb/m



RECORDING SYSTEM

INPUT FREQUENCY
400 Hz



DISASSEMBLY INSTRUCTIONS

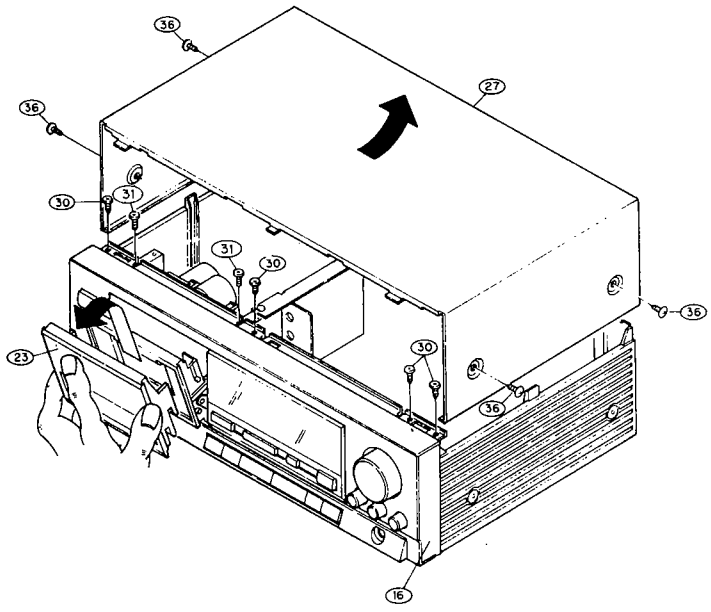
1. How to Remove the Front Panel

(1) Remove the four screws 4 ×10 CTTS(P) BK (36) at the side of the top cover (27). Move the top cover to the rear and rise it to remove it.

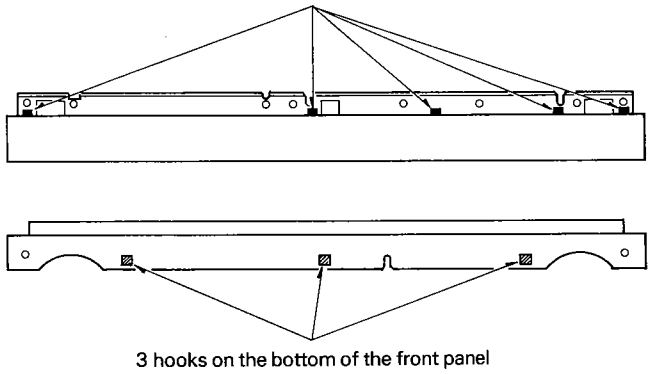
(2) Press the eject knob (14), open the cassette window (23) and remove the mechanism as shown in the figure.

Note: Handle the cassette window with care because it can be scratched easily.

(3) Remove the four screws (3 ×10 CBTS-P) (30) on top of the front panel (16), the five hooks on the top, the three hooks on the bottom and pull the unit forward to detach it.



5 hooks on the top of the front panel



3 hooks on the bottom of the front panel

2. How to Remove the Mechanism

(1) Remove the top cover (27) and front panel (16). (Refer to Step 1.)

(2) Remove the three securing screws on the shield bracket (18) and the screws (3 ×6 CBTS-P) (31) and detach the shield bracket. (Refer to the disassembly figure.)

(3) Remove the two securing screws (3 ×10 CBTS-P) (30) for the mechanism.

(4) Remove the connectors attached to the leads from the mechanism that are attached to the audio board and the power supply board. Remove the style pins that secure the wires.

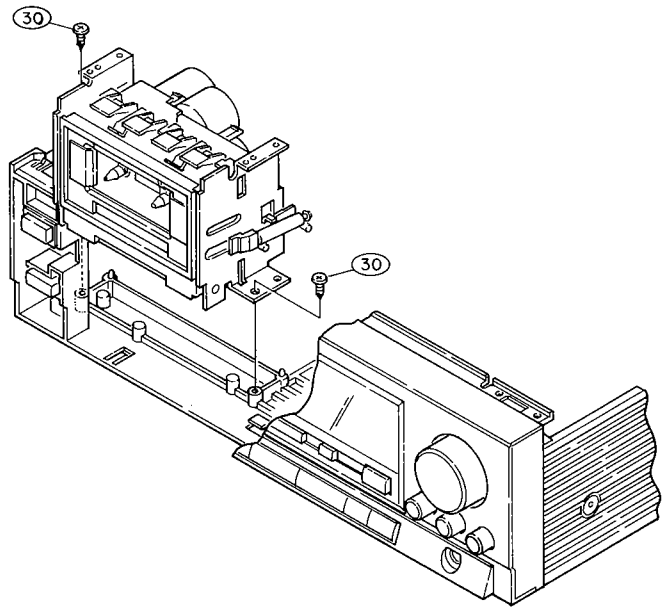
Mechanism

W891 → (8P) → CN891 (WHITE)	Power supply circuit board
W892 → (8P) → CN892 (RED)	
W171 → (6P) → CN171	Audio circuit board
W172 → (4P) → CN172	

Note: Be sure to check that the connectors are reconnected correctly when the unit is reassembled.

(5) Lift the unit up to remove it.

Note: When the reassembly is performed make sure that the stays at the bottom of the unit enter the slots in the chassis and that no wires are pinched between the unit and the chassis.



3. How to Remove the Front Escape Assembly

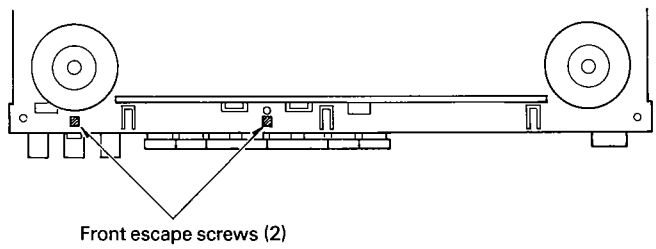
(1) Remove the top cover (27) and the front panel (16). (Refer to Step 1.)

(2) Remove the wires from the front escape assembly (9) that are connected to the audio board and power supply board.

Front Escape Assembly

W141 → (13P) → CN141	Audio circuit board
W151 → (3P) → CN151	
W121 → (3P) → CN121 (Blue)	
W291 → (25P) → CN291	Power supply circuit board

(3) Remove the two front escape screws from the bottom of the chassis and the front escape assembly can be removed towards the front.

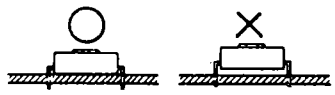


Front escape screws (2)

4. How to Remove the Meter Circuit Board

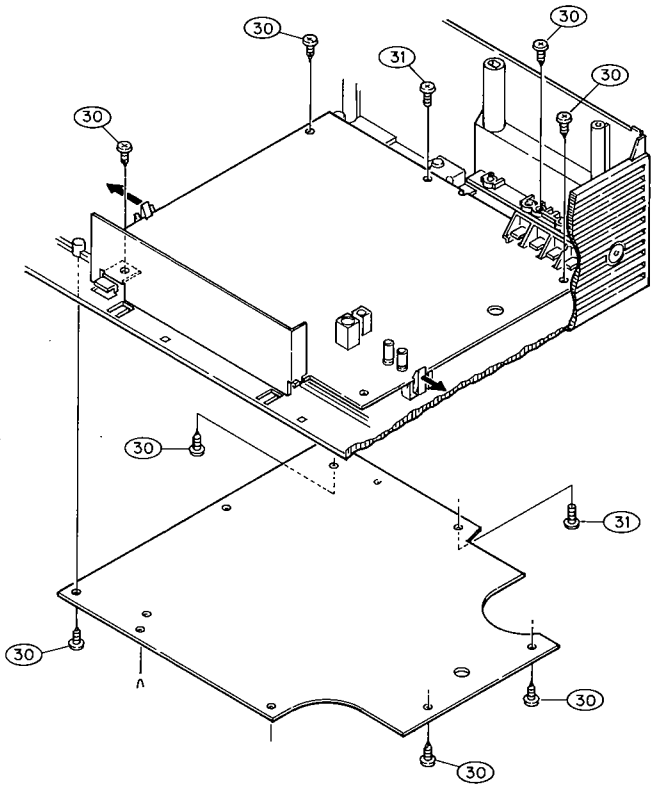
(1) Remove the top cover (27) and front panel (16). (Refer to Step 1.)
(2) Remove the front escape assembly (9). (Refer to Step 3.)
(3) Remove the three screws (3 ×10 CBTS-P) (30) that secure the unit board, the seven screws and remove the meter board.

Note: When replacing the (tactile-takuto) switch (X) insert it so it is not raised after assembly.



5. How to Remove the Audio Circuit Board

(1) Remove the top cover (27) and the front panel. (Refer to Step 1.)
(2) Remove the two cushions (26) attached to the chassis and the shield bracket (18).
(3) Remove the front escape assembly. (Refer to Step 3.)
(4) Remove the shield bracket (18).
(5) Remove the wires from the power supply board that are connected to the unit.
(6) Remove the screws (3 ×10 CBTS-P) that press the 4-pin jack, the three screws (3 ×10 CBTS-P) that secure the circuit board and the two screws that secure the board to the chassis and the board can pulled out of the assembly.

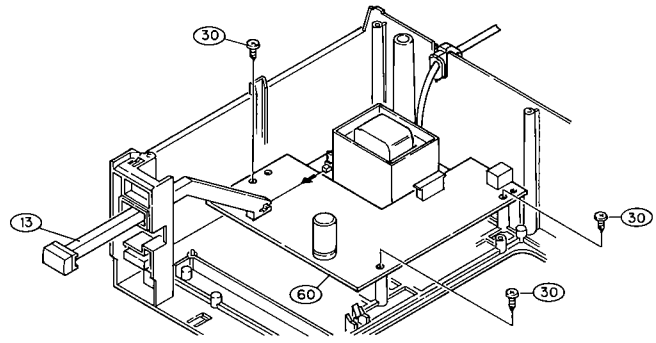


Note: Most service operations for the audio board can be performed by removing the bottom plate from the rear of the chassis. Refer to the previously described disassembly procedures if it is necessary to remove the enrire unit.

Assembly is the reverse of disassembly. Each part must be mounted in the correct position or the unit may not be able to be installed. Make sure that each part is mounted correctly during assembly.

6. How to Remove the Power Supply Board

(1) Remove the top cover and front panel. (Refer to Step 1).
(2) Pull out the power switch lever (13) from the power switch.
(3) Remove the wires from the unit that are attached to the audio board or power supply board.
(4) Remove the three screws (3 ×10 CBTS-P) (30) that secure the power supply circuit board and raise the board to remove it.



ADJUSTING AND CHECKING THE MECHANISM SECTION

1. Replacing the Pinch Roller Arm Ass'y 9

Before replacing the pinch roller, clean the tape contact surface of the pinch roller and the capstan shaft.

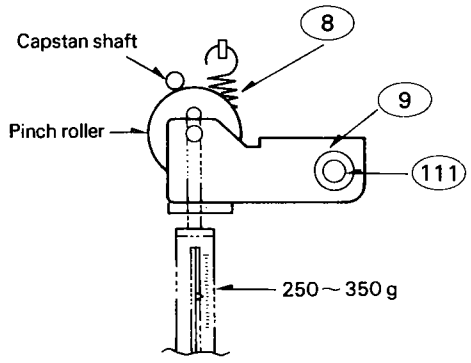
Most causes of poor tape transport can be traced to dirty pinch roller and capstan shaft.

The pinch roller arm ass'y 9 can be removed by removing the spring 8 and the slit washer 111.

After replacing, run a padless C-90 tape to check for tape curls at the tape guide section of the head.

2. Checking the Pressure Force of the Pinch Roller

In the playback mode, hook a spring weight onto the bracket at the center of the pinch roller. After separating the pinch roller from the capstan shaft, allow the pinch roller to contact the capstan shaft again. Check to make sure the spring weight reads between 250 ~ 350 g when the pinch roller starts to rotate. If it is not within the normal range, replace the spring 8.



3. Exchanging recording/playback head (23)

Detach the front panel first.

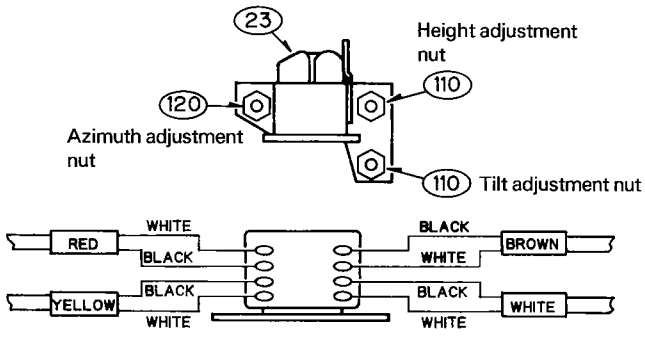
3-1 Dismounting recording/playback head

(1) Detach the recording/playback head locking screw (110) and the azimuth adjusting nut (120).

(2) Remove soldering on the head wire and separate the mechanical unit to dismount the recording/playback head.

3-2 Recording/playback head installation

Assembly is the reverse of the installation procedure described in section 3-1. The soldering for the head wire is performed as shown in Figure 3-1.



4. Recording/playback head Adjustment

4-1 Height adjustment (adjust with head adjustment jig THG-801)

(1) Set THG-801 (jig board) on the mechanical unit and perform the adjustment by turning the special height adjustment nut (110) so the 3.8 mm. part on THG-801 (jig shaft) can move without touching the tape guide on the recording/playback head (23).

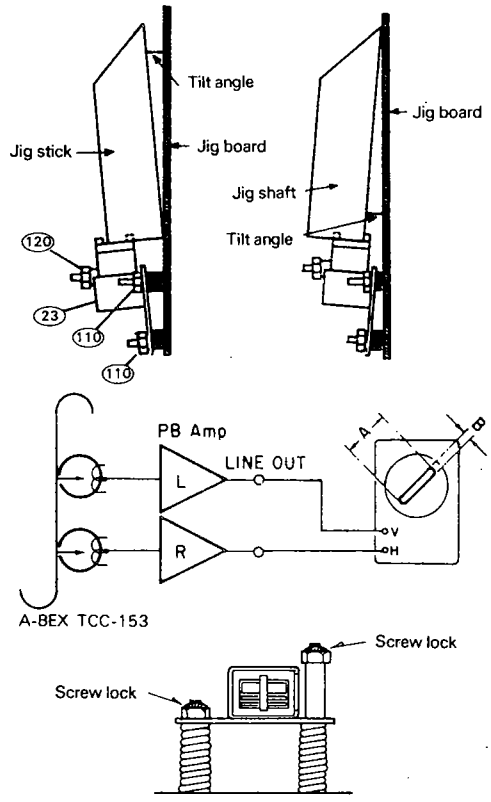
(2) Turn the azimuth adjusting nut (120) so that the recording/playback head does not tilt while adjusting the height, and make a rough visual adjustment.

4-2 Adjustment of tilt angle

(1) Set THG-801 (jig board) in the mechanical unit and place THG-801 (jig shaft) on the recording head to inspect the gap between the jig board. If the jig shaft is tilted forward, the tilt screw (110) is too tight. Loosen it slightly and adjust the tilt screw (110) until the jig stick is parallel to the jig board and the gap is completely eliminated.

(2) Readjusting the tilt may cause the height adjustment to slip. After adjusting the tilt, be sure to verify the height.
If the height is misaligned, turn the special height adjustment nut (110) and the tilt screw (110) to the same angle to shift the recording/playback head so it is parallel to the jig board for height readjustment. After the adjustment is completed, tighten the lock nuts.

Figure 4-2.1 Forward tilt case Figure 4-2.2 Backward tilt cas



Note: Be sure to mount the head adjust spacer.

5. Replacing the ERASE HEAD 24

(1) Unscrew the erase head holding screws 104, 105.

(2) By unsoldering the HEAD WIRES 72 can be taken off the mechanism unit.

4-3 Azimuth Adjustment

Playback test tape A-BEX TCC-153 and perform the adjustment by turning the azimuth adjustment nut (120) until A and B in the Lissajous wave figure are at the maximum and the minimum positions respectively. After azimuth adjustment is completed, check again to make sure there is no dislocation on the head height with the readjusting jig THG-801. After the adjustment is completed, secure the lock nuts on the adjusted parts.

6. Checking for Axis Direction Movements of the Capstan Shaft

Hold the capstan shaft from the front of the mechanism and move it in the axis direction; check to make sure some movement exists.

7. Checking the Take-up Torque

Load the cassette type torque meter (SONY TW2111). Check to make sure that the torque meter average reading is within 30～80 g-cm during playback. If it is not within this range, check the voltage (2.5～3 V) of the reel motor. If the voltage is low, the torque will be weak; if it is high, the torque will be strong.

8. Checking the FF and REW Torques

Load the cassette type torque meter (SONY TW2231). Check to make sure the torque meter indicates within 60～130 g-cm at the end of FF and REW.

9. Checking the Back Tension Torque During Record/Playback

Load the cassette type torque meter (SONY TW2111); check to make sure the torque meter reads between 1.5～7 g-cm during playback and that there is no unevenness.

If it is not within this range, check the section on adjusting the reel thrust movement; or else replace the spring 10.

10. Checking the FF and REW Times

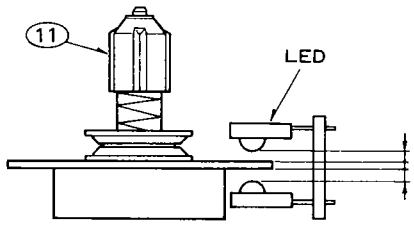
Load a C-60 cassette tape (DENON HD7E/60); check to make sure the tape is fast forwarded or rewound within 110 seconds. If it is not within this range, check section 9.

11. Checking the Operation of the Erase Prevention, Metal and Chrome Switch

Confirm that the leaf switch properly detecting the tape type detection holes on the cassette housing.

12. Checking the Gap Between the Pulse Detection LED and the Reel Ass'y

Check to make sure the gap between the surface of the shutter section of the reel ass'y and the LEDs is approximately 1 mm.



ADJUSTING THE ELECTRICAL SECTIONS

• Measuring instruments necessary for adjustments

(1) Audio signal generator
(2) Variable resistance attenuator
(3) Electronic voltmeter
(4) Oscilloscope
(5) Frequency counter
(6) Adjustment screwdriver
(7) Trap coil adjustment square stick
(8) Test tapes (SONY TY-224)
(A-BEX TCC-130, TCC-153, TCC-262B/162B)
(DENON HD7E/60)
(9) Transport Check cassette tape (A-BEX TCC-902)

• Caution on adjusting

(1) Before adjusting, clean the head surface, capstan and the pinch roller with a gauze or a cotton swab moistened with alcohol.
(2) Demagnetize the R/P HEAD and the E. HEAD with a head eraser.
(3) Completely demagnetize the adjustment screwdriver.
(4) Unless instructed otherwise, set the various controls as follows:
○ INPUT volume ..... maximum
○ OUTPUT LEVEL volume..... maximum
○ DOLBY NR switch ..... OFF
○ BIAS volume..... Center click position
○ BALANCE volume..... Center click position

1. Tape Transport Check

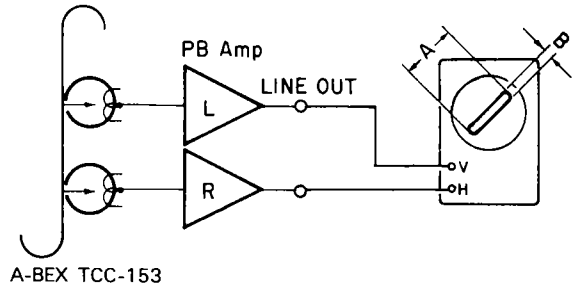
Load the transport check cassette. In the operational mode, illuminate the fixing guides of the R/P HEAD with a lamp and check to make sure the tape edge does not come in contact with the tape guide section.

The tape transport is the most important element in determining the performance of a cassette deck.

Avoid moving the various adjustment screws, nuts, etc., as much as possible. Refer to the pages on "Adjusting and Checking the Mechanism Section" when replacing or adjusting the R/P HEAD.

2. Adjusting the Azimuth

(1) After completing the tape transport check, load the test tape (A-BEX TCC-153).
(2) Playback the test tape; adjust the azimuth screw so that section A of the resurge wave form is maximum and section B is minimum.

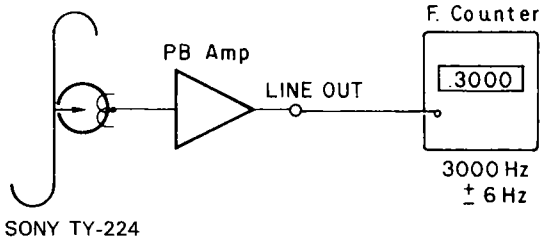


A-BEX TCC-153

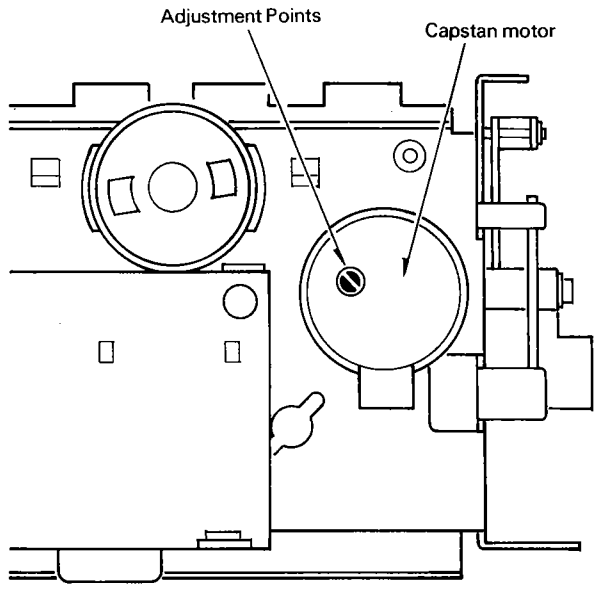
3. Checking and Adjusting the Tape Speed

(1) Connect the frequency counter to the LINE OUT terminal and load test tape (SONY TY-224).

(2) Playback a test tape. At about halfway through the tape, where the tape transport is stable, adjust the adjustment points on the back of the capstan motor so that the frequency counter will have a reading within the range of 3,000 Hz ±6 Hz.



SONY TY-224

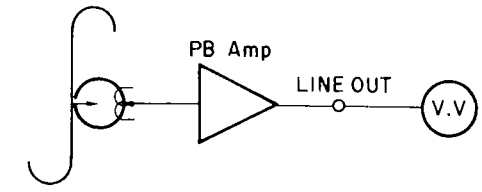


4. Adjusting the Playback Section

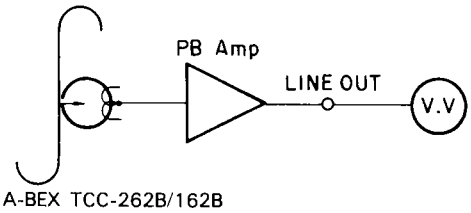
(1) Adjusting the playback level
Playback the Dolby standard level test tape (A-BEX TCC-130) and adjust RT-101 (L ch), RT-201 (R ch) so that the LINE OUT voltage becomes −2 dB (0.620 V).

(2) Adjusting the playback frequency response
Playback the test tape (A-BEX TCC-262B/162B) and check to make sure that the frequency response meets the specifications in the diagram.

Note: Before adjusting the playback frequency response, first adjust the azimuth using the 8 kHz signal at the beginning of the test tape (A-BEX TCC-262B). Also, after adjusting the playback frequency, make sure to readjust the azimuth with the test tape (A-BEX TCC-153) and then lock the adjustment screw.

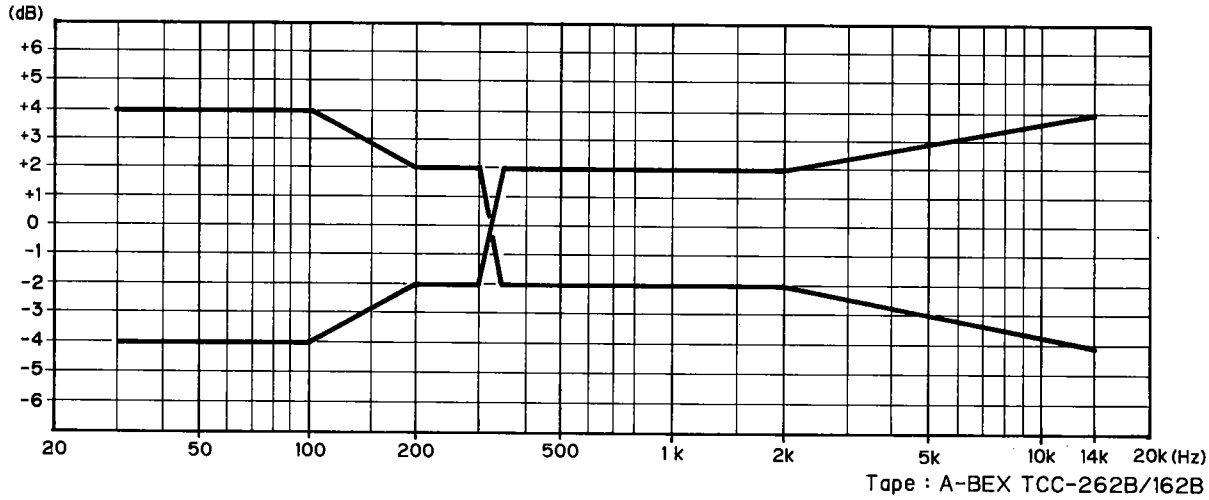


A-BEX TCC-130



A-BEX TCC-262B/162B

Playback Frequency Response

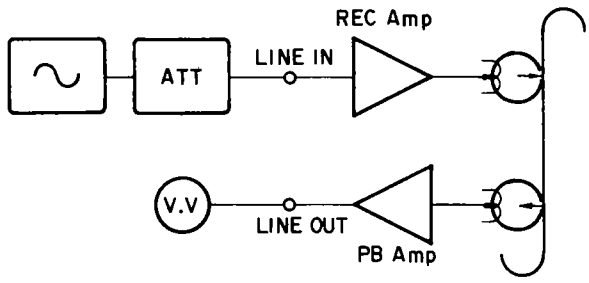


Tape : A-BEX TCC-262B/162B

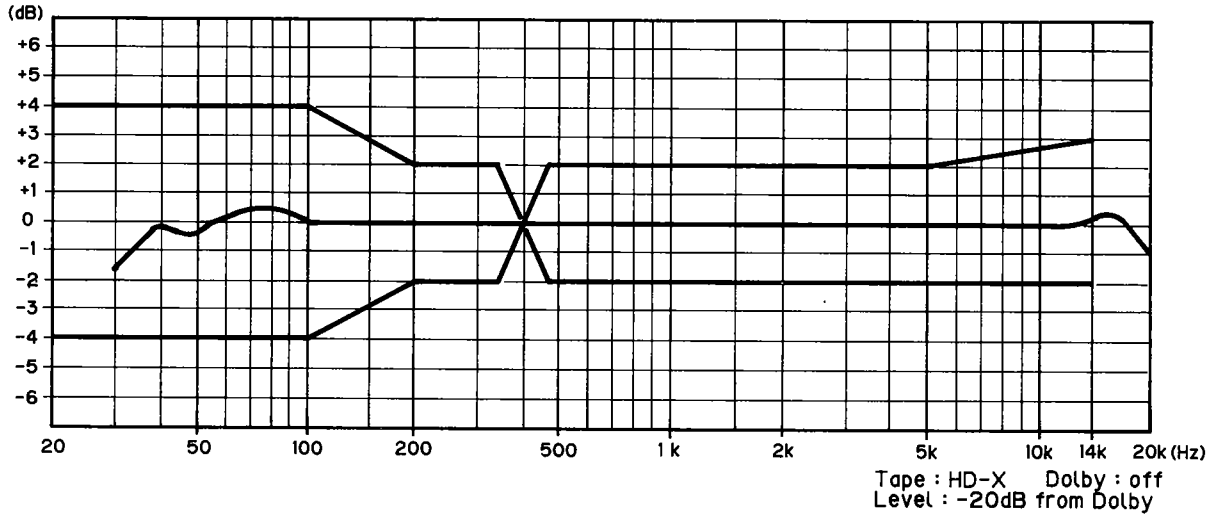
5. Adjusting the Recording Section

(1) Adjusting the record/playback overall frequency response. (CrO_2)

1) Load the test tape HD7E/60, record a signal with an input level of —20 dB, 1 kHz at the LINE IN terminal; playback this recording.
2) Change the frequency of the input signal to 10 kHz, record and playback; adjust RT-103 (L ch), RT-203 (R ch) so that the characteristic standards meet the following diagram when compared to the 1 kHz signal output level.
(The other TAPE POSITIONS will automatically be adjusted by finishing of the foregoing adjustments.)



Record/Playback Overall Frequency Response



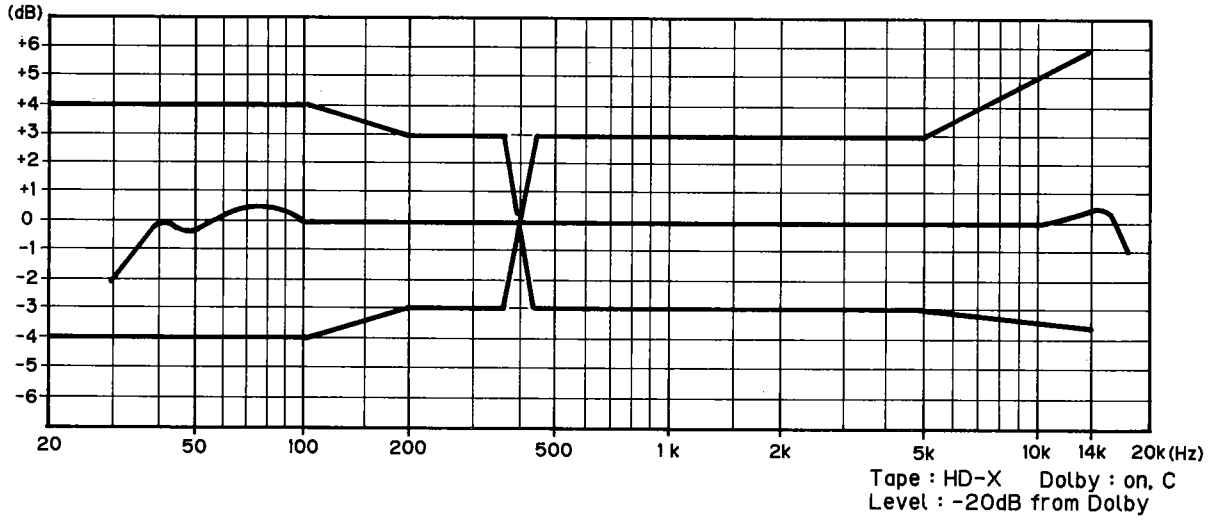
(2) Adjusting the record/playback levels (CrO_2)

1) Load a HD7E/60 tape and after having recorded a signal of 1 kHz (—20 dB), play it back.
2) Adjust RT-102 (L ch) and RT-202 (R ch) so that the output from the line out terminal has the same value as the output when monitoring the recording.

(3) Checking the Dolby C record/playback overall frequency response

1) Set the DOLBY NR switch to the "C" position.
2) Using the test tapes HD7E/60, perform record/playback in the same manner as 5-(1).
3) Check to make sure that the record/playback overall frequency response meets the specifications in the diagram.

Dolby C Record/Playback Overall Frequency Response

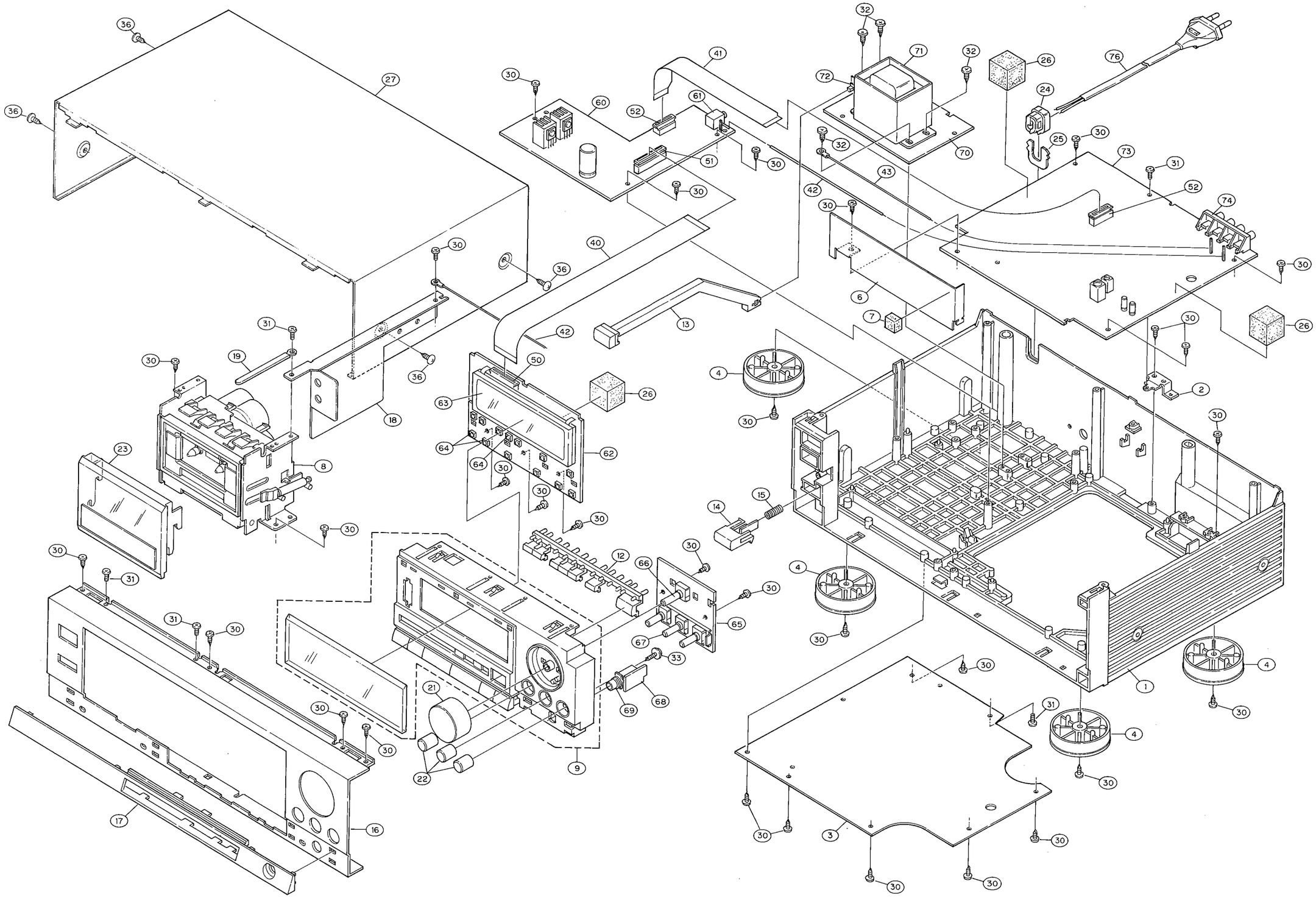


PARTS LIST OF EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks
1	411 0857 301	CHASSIS	Europe, U.K. Australia (Black)
	411 0857 330	CHASSIS	U.S.A., Canada (Black)
	411 0857 314	CHASSIS	Asia (Black)
	411 0857 327	CHASSIS	Europe (Gold)
⊙ 2	414 0525 001	EARTH BRACKET	
⊙ 3	105 0828 105	BOTTOM COVER	
4	104 0183 119	FOOT ASS'Y	
	104 0183 122	FOOT ASS'Y	U.S.A. only
6	412 2782 008	SHIELD PLATE	
7	461 0178 001	RUBBER SHEET	
8	VM154	CASSETTE MECHA	
9	103 1389 003	FRONT ESC ASS'Y	(Black)
	103 1389 029	FRONT ESC ASS'Y	U.S.A., Canada (Black)
	103 1389 016	FRONT ESC ASS'Y	Europe (Gold)
12	113 1190 105	PUSH KNOB (A)	(Black)
	113 1190 121	PUSH KNOB (A)	U.S.A. only (Black)
	113 1190 118	PUSH KNOB (A)	Europe (Gold)
13	113 1188 104	P.S. LEVER ASS'Y	(Black)
	113 1188 120	P.S. LEVER ASS'Y	U.S.A. only (Black)
	113 1188 117	P.S. LEVER ASS'Y	Europe (Gold)
14	113 1187 202	EJECT KNOB	(Black)
	113 1187 228	EJECT KNOB	U.S.A. only (Black)
	113 1187 215	EJECT KNOB	Europe (Gold)
15	463 0617 005	SPRING	
16	144 1844 277	FRONT PANEL	(Black)
	144 1844 280	FRONT PANEL	Europe (Gold)
17	103 1223 240	ESC BAR	(Black)
	103 1223 266	ESC BAR	U.S.A., Canada (Black)
	103 1223 253	ESC BAR	Europe (Gold)
18	414 0527 106	SHIELD BRACKET	
19	445 0048 003	CORD HOLDER	
21	112 0515 131	VOL KNOB	(Black)
	112 0515 128	VOL KNOB	U.S.A. only (Black)
	112 0515 144	VOL KNOB	Europe (Gold)
22	112 0555 007	VOL KNOB (B)	(Black)
	112 0555 010	VOL KNOB (B)	Europe (Gold)
23	103 1401 004	C. WINDOW	(Black)
	103 1401 020	C. WINDOW	U.S.A. only (Black)
	103 1401 017	C. WINDOW	Europe (Gold)
24	445 0056 008	CORD BUSH	
25	412 2008 012	BUSHING PLATE	
26	461 0502 004	CUSHION	
	461 0502 017	CUSHION	U.S.A. only
27	102 0386 004	TOP COVER	(Black)
	102 0386 020	TOP COVER	Europe (Gold)

Ref. No.	Part No.	Part Name	Remarks
30	473 7508 017	3×10 CBTS(P)-B	
31	473 7002 018	3×8 CBTS(S)-Z	
32	473 7502 013	4×10 CBTS(P)-Z	
33	477 0262 006	SPECIAL SCREW	
36	473 7503 038	4×10 CTTS(P)-BK	
40	009 0027 006	25P FFC CABLE	
41	009 0028 005	17P FFC CABLE	
42	001 0038 075	VINYL WIRE	
50	205 0499 025	25P FFC CON. BASE(S)	CN291
51	205 0491 036	25P FFC CON. BASE(S)	CN291
52	205 0491 023	17P FFC CON. BASE(S)	CN191
⊙ 60	4U- 1817 Z71	PWR LOGIC PWB ASS'Y	
61	204 8260 004	MINI JACK	JK002
⊙ 62	4U- 1817 Z72	MTR CONTROL PWB ASS'Y	
63	393 4075 001	FIP9BEM8	FL901
64	212 4388 907	TACT SWITCH	
⊙ 65	4U- 1817 Z74	VOLUME PWB ASS'Y	
66	211 0597 003	V1620P30FA104	VR302
67	211 0595 005	V1103P25C	VR301
⊙ 68	4U- 1817 Z75	H. PHONE PWB ASS'Y	
69	204 8264 026	H/P JACK	J001
⊙ 70	4U- 1823 Z	P. SUPPLY UNIT	Europe
	4U- 1823 U	P. SUPPLY UNIT	U.S.A., Canada
	4U- 1823 K	P. SUPPLY UNIT	U.K., Australia
	4U- 1823 M	P. SUPPLY UNIT	Asia
⚠ 71	233 5736 005	POWER TRANS.	Australia, Europe, U.K.
	233 5737 004	POWER TRANS.	U.S.A.
	233 5739 002	POWER TRANS.	Canada
	233 5738 003	POWER TRANS.	Asia
⚠ 72	212 0286 003	POWER SWITCH	SW901
⊙ 73	4U- 1816 Z7	AUDIO PWB DIAGRAM	
74	204 8310 006	4P PIN JACK	JK301
⚠ 76	206 2063 009	AC CORD	Europe
	206 2061 001	AC CORD	U.S.A., Canada
	206 2024 006	AC CORD	U.K.
	206 2025 005	AC CORD	Australia
	200 6031 026	AC CORD	Asia
★	513 8294 000	VDE LABEL	Europe only
★	515 8253 025	APPROVAL MARK	Europe only
★	513 8266 009	DANGEROUS MARK	U.S.A. only
★	513 1222 008	DATE LABEL	Canada only
★	513 8244 005	UL LABEL WITH DATE	U.S.A. only
★	515 0418 301	DAI WARRANTY HOME	U.S.A. only
★	515 0388 208	DCI WARRANTY	Canada only
★	212 4698 008	VOLTAGE SELECTOR	Asia only
★	515 8030 008	PRESET LABEL	Asia only

EXPLODED VIEW OF CABINET AND CHASSIS GROUP



PARTS LIST OF 4U-1817, 4U-1823 (POWER/LOGIC SELECTION)

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC801	263 0618 006	BA6800A	
IC901	262 1404 009	μPD75206CW	
IC902, 903	262 0447 009	BA6109U1	
TR601, 602	269 0022 904	DTA143ES (4.7K-4.7K)T	
TR800	269 0040 902	DTC144ES (47K-47K)T	
TR901	279 0021 009	2SD985 (L)	
TR902	279 0020 000	2SB794 (L)	
TR903, 905	273 0178 925	2SC1740 (R/S) T-70	
TR904	272 0025 907	2SB562(C)T,F	
TR908, 909 907	269 0015 908	DTC124XS (22K-47K)T	
TR916	269 0062 906	DTC124ES	
TR910	269 0019 904	DTA143XS (4,7K-10K)T	
TR911, 912	269 0090 907	DTC143XS-T	
TR913	271 0183 901	2SA933 (Q/R/S) T-93	
D801～811 813, 814 820～824 921, 924 925, 928 929	276 0432 903	1SS270A TE	
D901～908 922, 927	276 0519 907	1SR35-200AT82	
D911, 912	276 0469 918	HZS9C-2TD	
D913	276 0483 910	HZS30-2TD	
D914	276 0466 911	HZS7C-2TD	
D915, 918	276 0463 927	HZS6C-3TD	
D917	276 0455 906	HZS4A-1TD	
D919	276 0469 905	HZS9C-1TD	
D930	276 0519 004	1SR35-200A	
D920	276 0462 928	HZS6B-3	
RESISTOR GROUP			
R931	244 0079 026	RS14B3D270JNBF	27 Ω 2 W
VR301	211 0595 005	V1103P25C	
VR302	211 0597 003	V1620P30FA104	
CAPACITOR GROUP		**Ceramic**	
⚠ C001	253 8010 007	CK45=2GAC103P	0.01 μF/ 400 V AC
C801	253 9030 947	CK45=1E472KT	0.0047 μF/ 25 V
C915, 916 917, 918	253 1180 921	CK45B1H102KT (DD-3)	0.001 μF/50 V
C919	253 9031 917	CK45=1E683KT	0.068 μF/25 V
C923, 924 926, 927	253 9030 963	CK45=1E103KT	0.01 μF/25 V
C933	253 9030 044	CK45=1E472K	0.0047 μF/ 25 V

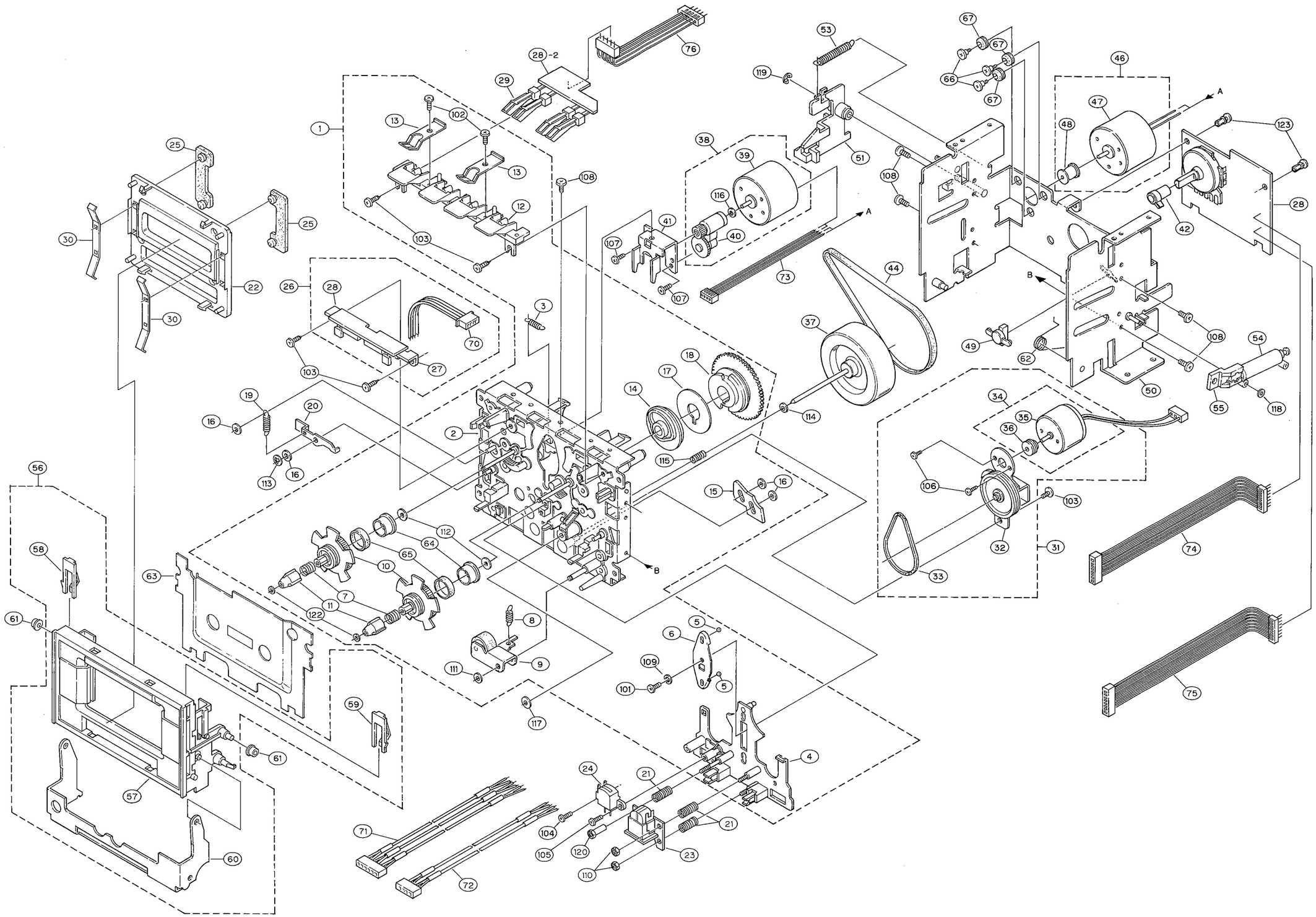
Ref. No.	Part No.	Part Name	Remarks
Electrolytic			
C602, 702	254 4252 901	CE04W1A220MT	22 μF/10 V
C901, 904	254 4256 790	CE04W1E222MC	2200 μF/25 V
C902, 905 908	254 4252 927	CE04W1A470MT	47 μF/10 V
C903, 906	254 4252 930	CE04W1A101MT	100 μF/10 V
C909	254 4256 952	CE04W1E221MT	220 μF/25 V
C910	254 4261 730	CE04W1H221MC	220 μF/50 V
C911, 912	254 4258 947	CE04W1V470MT	47 μF/35 V
C913	254 4256 907	CE04W1E100MT	10 μF/25 V
C914, 929	254 4260 951	CE04W1H2R2MT	2.2 μF 50 V
C921	259 0007 702	SBCAP==822=C	8200 μF/6.3 V
C925	254 4255 717	CE04W1C472MC	4700 μF/16 V
C931	254 4254 954	CE04W1E100MT	10 μF/25 V
C932	254 4260 948	CE04W1H010MT	1 μF/50 V
OTHER PARTS GROUP			
XT901	399 0079 009	CST4, 19MG	
SW801 ～811 813, 814	212 4388 907	TACT SWITCH (IM)	
SW901	212 0286 003	POWER SWITCH	
CN891	205 0343 087	8P CONN. BASE (KR-PH)	
CN892	205 0321 083	8P CONN. BASE (RED)	
CN901	205 0343 074	7P CONN. BASE (KR-PH)	
★	415 0299 000	CONDENSER COVER	
★	202 0022 008	FUSE HOLDER	Asia only
★	206 1031 045	FUSE (0.25)A	Asia only

PARTS LIST OF MECHANISM

Ref. No.	Part No.	Part Name	Remarks
1	411 1011 308	MECHA BASE (G) ASS'Y	
2	411 0469 809	MECHA BASE ASS'Y	
3	463 0420 001	SPRING	
4	431 0297 305	HEAD PLATE ASS'Y	
5	425 0177 006	STEEL BALL D3.5	
6	463 0418 301	HEAD PLATE SPRING	
7	463 0522 103	SPRING	
8	463 0456 004	SPRING	
9	433 0451 008	P. ROLLER ARM ASS'Y	
10	424 0085 108	REEL DRIVE WHEEL	
11	421 0446 104	REEL DRIVER	
12	411 0471 509	SWITCH HOLDER	
13	463 0422 407	CASSETTE SPRING	
14	424 0080 103	CAM (2)	
15	431 0180 409	PINCH LEVER	
16	443 0426 001	SPEED NUT	
17	412 1853 006	SEPARATOR	
18	424 0079 101	CAM (1)	
19	463 0453 104	RETURN SPRING	
20	433 0425 102	STOPPER	
21	463 0607 002	ADJUST SPRING	
22	103 1221 514	STABILIZER	
23	391 0283 008	R/P HEAD	
24	391 0265 000	E HEAD	
25	461 0491 209	STABILIZER PAD (A)	
26	DS0 4A0 1	SENSER HOLDER SUB ASS'Y	
27	441 0546 309	SENSER HOLDER	
28	2U- 143 8-32	MECHA P.W.B UNIT	
29	212 4649 002	LEAF SWITCH	
30	463 0609 107	STABILIZER SPRING	
31	DC0 6A0 1	CAM MOTOR (G) SUB ASS'Y	
32	441 0580 103	PULLEY GEAR ASS'Y	
33	423 0037 001	BELT	
34	DC0 6A0 2	CAM MOTOR SUB ASS'Y	
35	217 0133 012	CAM MOTOR	
36	421 0420 007	PULLEY (1)	
37	421 0418 006	FLY WHEEL ASS'Y	
38	DR0 4A0 2	REEL MOTOR SUB ASS'Y	
39	217 0161 000	REEL MOTOR	
40	424 0113 504	DIRECTION GEAR ASS'Y	
41	441 0874 301	REEL MOTOR PLATE	
42	435 0106 100	CONNECTING PIECE	
44	423 0038 204	BELT	
46	DC0 7A0 2	CAPSTAN MOTOR SUB ASS'Y	
47	217 0162 009	CAPSTAN MOTOR	
48	421 8383 007	MOTOR PULLEY	
49	461 0473 201	THRUST STOPPER	

Ref. No.	Part No.	Part Name	Remarks
50	441 1052 504	MECHA STAY ASS'Y	
51	433 8269 700	HOOK	
52			
53	463 0457 003	SPRING	
54	469 8013 133	AIR DUMPER	
55	433 8271 400	DAMPER GUIDE	
56	DC0 5A0 1	CASSETTE BOX SUB ASS'Y	
57	103 1209 400	CASSETTE BOX	
58	103 8243 401	CASSETTE SUPPORT (L)	
59	103 8243 414	CASSETTE SUPPORT (R)	
60	433 0535 005	CASSETTE BOX HOLDER	
61	431 8097 002	COLLAR	
62	463 0636 002	BOX SPRING	
63	144 1351 320	ESC PLATE	
64	421 0374 001	BUSH	
65	423 0042 009	BRAKE RING	
66	477 0294 003	SPECIAL SCREW	
67	462 0086 015	MOTOR CUSHION	
70	203 6268 005	4P EH CONN. CORD	W-504
71	204 0164 001	6P EH CONN. CORD	FOR P/B HEAD
72	203 6168 008	4P EH CONN. CORD	FOR E. HEAD
73	203 6192 016	4P PH CONN. CORD	W-505
74	204 2349 015	8P KR-DS CONN. CORD	W-501
75	204 2348 029	8P KR-DS CONN. CORD	W-503
76	203 8180 000	5P DA-DA CONN. CORD	W-502
101	471 3204 018	2.6 ×8 CBS-Z	
102	473 7500 057	3 ×5 CBTS(P)-Z	
103	473 7500 015	3 ×8 CBTS(P)-Z	
104	471 3812 002	2 ×8 CBS-B	
105	473 7507 005	2 ×8 CBTS(P)-B	
106	471 9004 005	M1.7 ×2 #0	
107	471 3802 012	2.6 ×3 CBS-Z	
108	471 3202 010	2.6 ×5 CBS	
109	475 2002 006	2.6 SW	
110	475 6020 000	2N	
111	475 1121 108	SLIT WASHER	
112	477 0265 058	WASHER	
113	477 0266 002	CS WASHER	
114	477 0090 087	WASHER	
115	463 0618 004	FLY WHEEL SPRING	
116	477 0265 032	WASHER	
117	477 0090 074	WASHER	
118	475 1120 109	SLIT WASHER	
119	476 1003 009	3E RING	
120	443 8671 104	SPECIAL NUT	
122	475 1119 110	SLIT WASHER	
123	477 0096 007	PUSH RIVET	

EXPLODED VIEW OF MECHANISM



PARTS LIST OF 4U-1816 (AUDIO SECTION)

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC301	263 0317 006	M-5220P	
IC302, 305 309	263 0257 001	M-5218P	
IC312	263 0515 007	BA15218	
IC303, 308	263 0455 007	CX20187	
IC304	262 0276 005	HD14066BP	
IC310	263 0354 001	μPC1297CA	
TR102, 105 107, 202 205, 207 302, 303	273 0245 900	2SC2603E/FT	
TR103, 106 203, 206	275 0048 909	2SK381 (D)/(E)-T	
TR104, 108 ~111 204, 208 ~211 310, 311 314, 316	269 0015 908	DTC124XS (22K-47K)T	
TR304, 305	269 0014 909	DTA124XS (22K-47K)T	
TR313	272 0025 907	2SB562 (C)TF	
TR319	269 0093 904	DTA144ES (47K-47K)T	
TR320, 321	269 0019 904	DTA143XS (4.7K-10K)T	
TR322	269 0062 906	DTC124ES (22K-22K)T	
D310	276 0459 915	HZS5B-2TD	
D312	276 0432 903	1SS270ATE	
D532, 311	276 0468 919	HZS9B-2	
RESISTOR GROUP			
R304	244 2036 012	RD14B2H3R9JFRF	3.9 Ω 1/2 W
RT102, 103 202, 203	211 6077 954	V06PB223 (IM)	REC, CAL
RT101, 201	211 6077 938	V06PB104 (IM)	PB, GAIN
CAPACITOR GROUP			
Ceramic			
C101, 201	253 1179 945	CK45B1H221KT (DD-3)	220 PF/50 V
C154, 254	253 1179 923	CK45B1H151KT	150PF/50 V
C111, 138 211, 238	253 9031 917	CK45=1E683KT	0.068 μF/25 V
C134, 234 306	253 9031 962	CK45=1E272KT	0.0027 μF/ 25 V
C143, 243 150, 250	253 9030 963	CK45=1E103KT	0.01 μF/25 V
C149, 249	253 9031 975	CK45=1E392KT	0.0039 μF/ 25 V
C146, 246	253 9030 989	CK45=1E223KT	0.022 μF/25 V
C151, 251 315	253 9030 934	CK45=1E332KT	0.0033 μF/ 25 V
C160, 260	253 1180 918	CK45B1H821KT (DD-3)	820 PF/50 V
C152, 252	253 1179 987	CK45B1H471KT (DD-3)	470 PF/50 V
C153, 253	253 9030 918	CK45=1E152KT	0.0015 μF/ 25 V
C319	253 9030 921	CK45=1E222KT	0.0022 μF/ 25 V
C156, 256	253 1180 947	CK45B1H152KT (DD-3)	0.0015 μF/50 V
C161, 261 305	253 9030 989	CK45=1E223KT	0.022 μF/25 V
C162, 262	253 9030 992	CK45=1E333KT	0.033 μF/25 V
C163, 263	253 1179 903	CK45B1H101KT	100 PF/50 V
C164, 264	253 1131 909	CK45B2H391KT	390 PF/500 V
C165, 265	253 9030 963	CK45=1E103KT	0.01 μF/25 V
C170, 270	253 1179 945	CK45B1H221KT (DD-3)	220 PF/50 V
C307	253 4470 900	CC45SL2H100DT	10 PF/500 V
C311	253 9031 904	CK45=1E473KT	0.047 μF/25 V
C360	253 9036 909	CK45=1E104ZT	0.1 μF/25 V
Electrolytic			
C103, 115 203, 215	254 4254 909	CE04W1C100MT	10 μF/16 V
C105, 205	254 3056 920	CE04D1H2R2MBPT	2.2 μF/50 V
C107, 133 207, 233	254 4260 935	CE04W1HR47MT	0.47 μF/50 V
C108, 135 208, 235	254 4228 919	CE04W1HR15MT (LL)	0.15 μF/50 V
C110, 137 210, 237	254 4260 919	CE04W1HR22MT	0.22 μF/50 V
C316	254 4252 901	CE04W1A220MT	22 μF/16 V
C116, 216	254 4260 948	CE04W1H010MT	1 μF/50 V
C130, 230	254 3056 917	CE04D1H010MBPT	1 μF/50 V
C131, 231	254 3055 905	CE04D1V4R7MBPT	4.7 μF/35 V
C142, 242 317, 318	254 4254 909	CE04W1C100MT	10 μF/16 V
C144, 244	254 4258 905	CE04W1V4R7MT	4.7 μF/35 V
C145, 245 312, 313	254 4252 927	CE04W1A470MT	47 μF/10 V
C321	254 4256 910	CE04W1E220MT	22 μF/25 V
C325, 326	254 4252 930	CE04W1A101MT	100 μF/10 V
C601, 701	254 4260 951	CE04W1H2R2MT	2.2 μF/50 V
Film			
C102, 202	255 1209 905	CQ93M1H562JT	0.0056 μF/50 V
C104, 204	255 1213 904	CQ93M1H123JT	μF/50 V
C106, 132 206, 232	255 1208 906	CQ93M1H472JT	0.0047 μF/50 V
C109, 136 209, 236	255 1214 903	CQ93M1H153JT	0.015 μF/50 V
C112, 139 212, 239	255 1220 900	CQ93M1H473JT	0.047 μF/50 V
C113, 140 213, 240	255 1210 907	CQ93M1H682JT	0.0068 μF/50 V
C147, 247	255 1209 905	CQ93M1H562JT	0.0056 μF/50 V
C114, 141 214, 241	255 1212 905	CQ93M1H103JT	0.01 μF/50 V
C308	255 4079 925	CQ93P2A822JT	0.0083 μF/ 100 V
OTHER PARTS GROUP			
L101, 201	231 0825 009	BIAS FILTER	
L102, 104 202, 204	232 9007 009	SKEWING COIL	
L103, 203	232 0109 003	MPX FILTER	
L105, 205	235 0020 916	INDUCTOR 822JT	
L106, 206	235 0020 945	INDUCTOR 153JT	
L107, 207	239 0010 009	HX STEP UP COIL	
L303	232 0135 006	OSC COIL	
CN121	205 0406 034	3P CONN. BASE (KR-PH)	
CN141	205 0375 039	13P CONN. BASE (KR-PH)	
CN151	205 0343 032	3P CONN. BASE (KR-PH)	
CN171	205 0233 061	6P EH CONN. BASE	
CN172	205 0233 045	4P EH CONN. BASE	
CN191	205 0514 010	17P FFC CONN. BASE(S)	
JK301	204 8310 006	4P PIN JACK	

PARTS LIST OF PACKING & ACCESSORIES

Ref. No.	Part No.	Part Name	Remarks
★	505 0038 030	POLY COVER	
★	203 2223 002	2P PIN CORD	
★	203 2227 008	2P MINI PLUG CORD	
★	511 1796 004	INST MANUAL	
★	511 1800 000	INST MANUAL	U.S.A.
★	511 1797 003	SPANISH INST MANUAL	Europe
★	515 0455 005	TAPE CATALOG (E_2)	
★	515 0443 004	TAPE CATALOG	Canada, U.S.A.
★	505 0131 050	CABINET COVER	
★	504 0012 060	STYLEN PAPER	
★	503 0778 006	PACKING	
★	501 1338 009	CARTON CASE	
★	513 1389 006	CONTROL CARD BASE	
★	513 1349 004	THERMAL CARBON FILM	
★	203 3667 007	PLUG ADAPTER	Asia only

NOTE FOR PARTS LIST

- Part indicated with the mark "⊙" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicated "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/6 W, 1/4 W Type in the P. W. Board parts list.
- Parts marked with this symbol ⚠ have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

- Refer to the following table for the codes of the resistors and capacitors appearing on the parts list.

• Resistors

Ex.: RN 14K 2E 182 G FR

(RN: Type; 14K: Shape and performance; 2E: Power; 182: Resistance ★; G: Allowable error; FR: Others)

RD : Carbon RC : Fixed RS : Metallic film RW : Winding RN : Metal film RK : Metal mixture	2B : ⅛W 2E : ¼W 2H : ½W 3A : 1W 3D : 2W 3F : 3W 3H : 5W	F : ±1% G : ±2% J : ±5% K : ±10% M : ±20%	P : Pulse-resistant type NL : Low noise type NB : Non-burning type FR : Fuse resistor F : Lead wire forming

★Resistance

1 8 2 ⇨ 1800Ω = 1.8kΩ

- 2: Indicates number of zeros after effective number
- 18: 2-digit effective number, decimal point indicated by R.
- Units: Ω

• Capacitors

Ex.: CE 04W 1H 2R2 M BP

(CE: Type; 04W: Shape and performance; 1H: Dielectric strength; 2R2: Capacity ★; M: Allowable error; BP: Others)

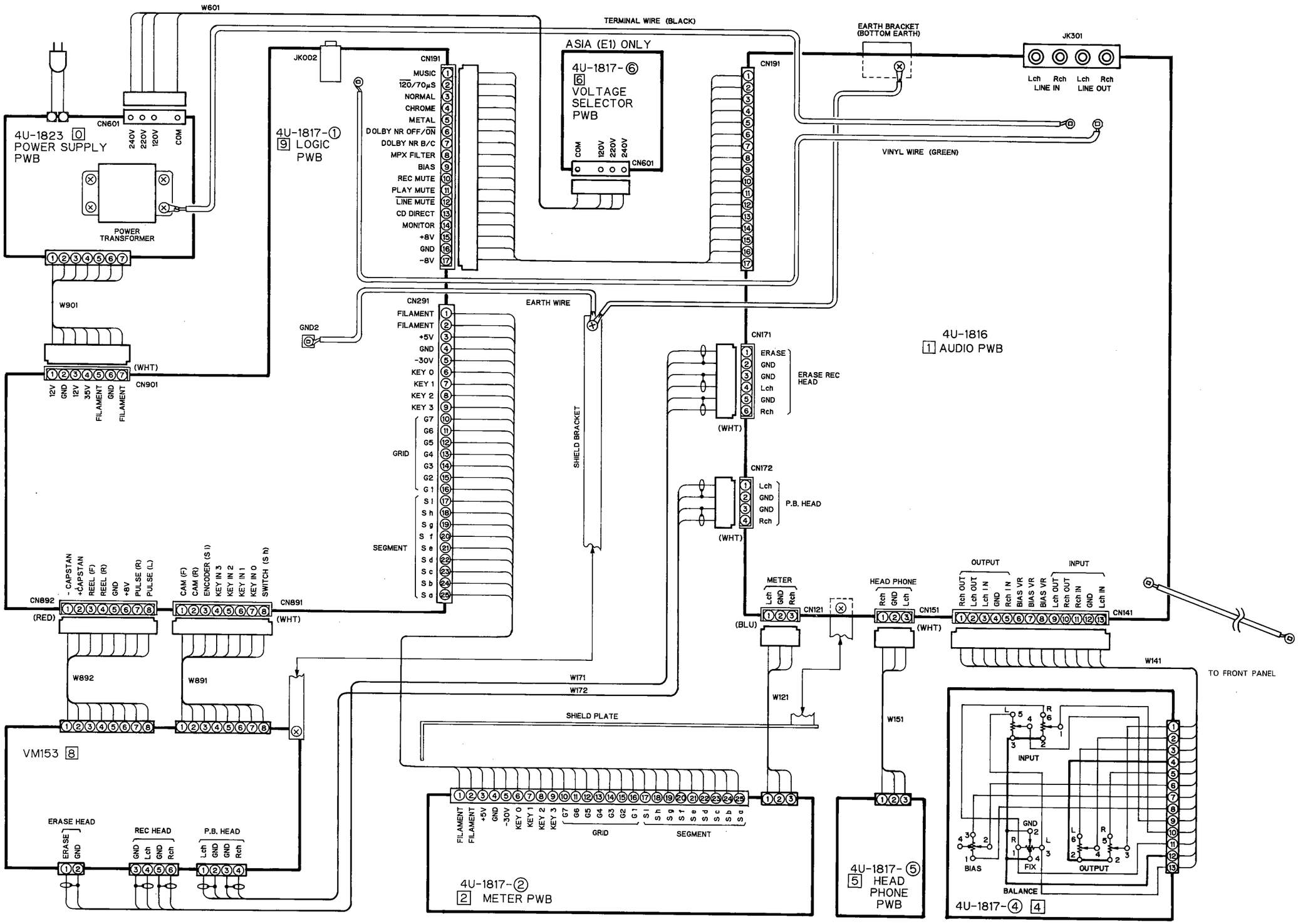
CE : Aluminum foil electrolyte CA : Aluminum solid electrolyte CS : Tantalum electrolyte CQ : Film CK : Ceramic CC : Ceramic CP : Oil CM : Mica CF : Metallized CH : Metallized	0J : 6.3V 1A : 10V 1C : 16V 1E : 25V 1V : 35V 1H : 50V 2A : 100V 2B : 125V 2C : 160V 2D : 200V 2E : 250V 2H : 500V 2J : 630V	F : ±1% G : ±2% J : ±5% K : ±10% M : ±20% Z : +80% −20% P : +100% −0% C : ±0.25pF D : ±0.5pF = : Others	HS : High stability type BP : Non-polar type HR : Ripple-resistant type DL : For charge and discharge HF : For assuring high frequency U : UL part C : CSA part W : UL-CSA type F : Lead wire forming

★Capacity

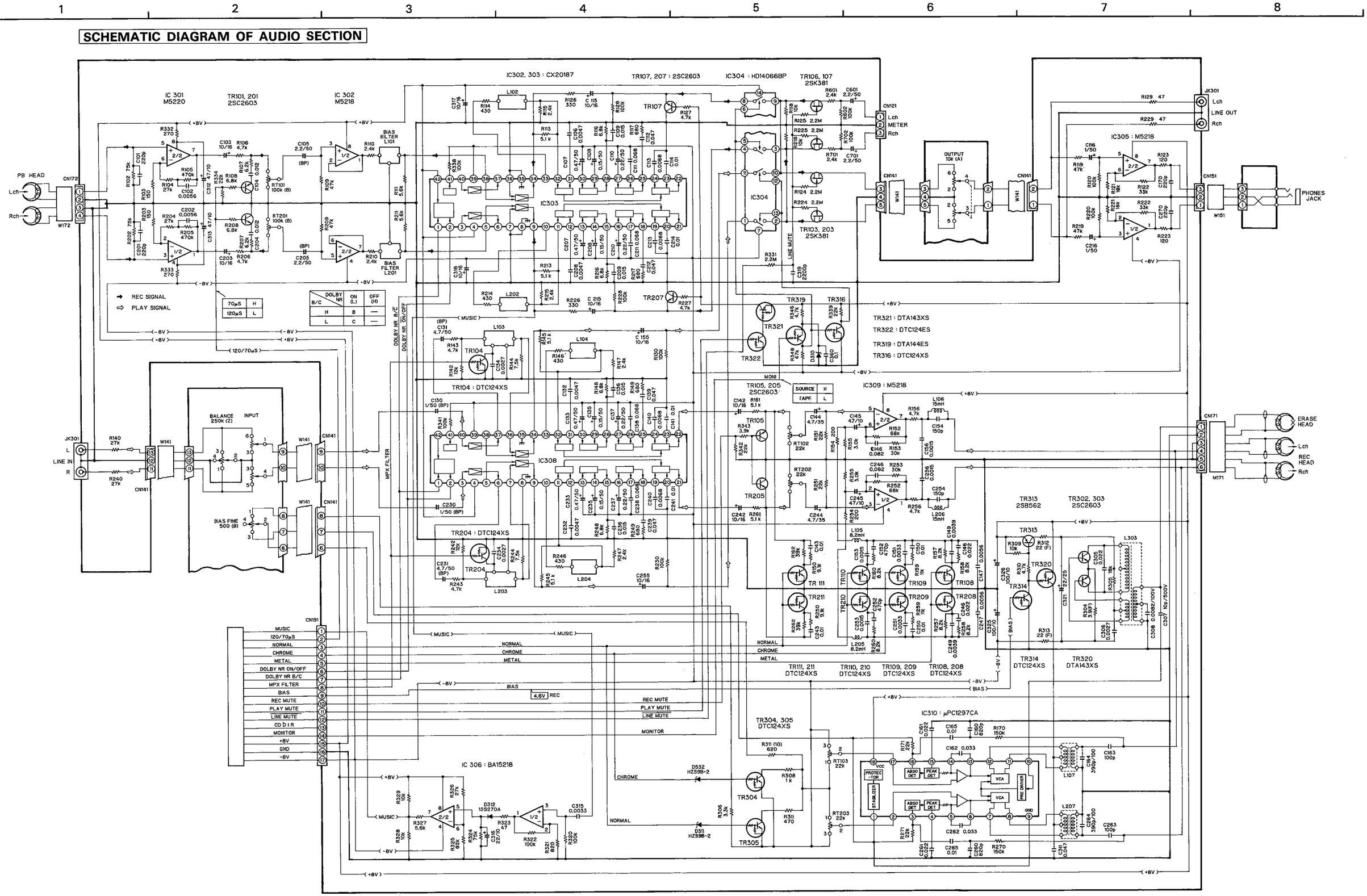
2 R 2 ⇨ 2.2μF

- 2: 1-digit effective number, decimal point indicated by R.
- 2R2: 2-digit effective number, decimal point indicated by R.
- Units: μF, (for P, pF (μμF)
- When the dielectric strength is indicated in AC, "AC" is included after the dielectric strength value.

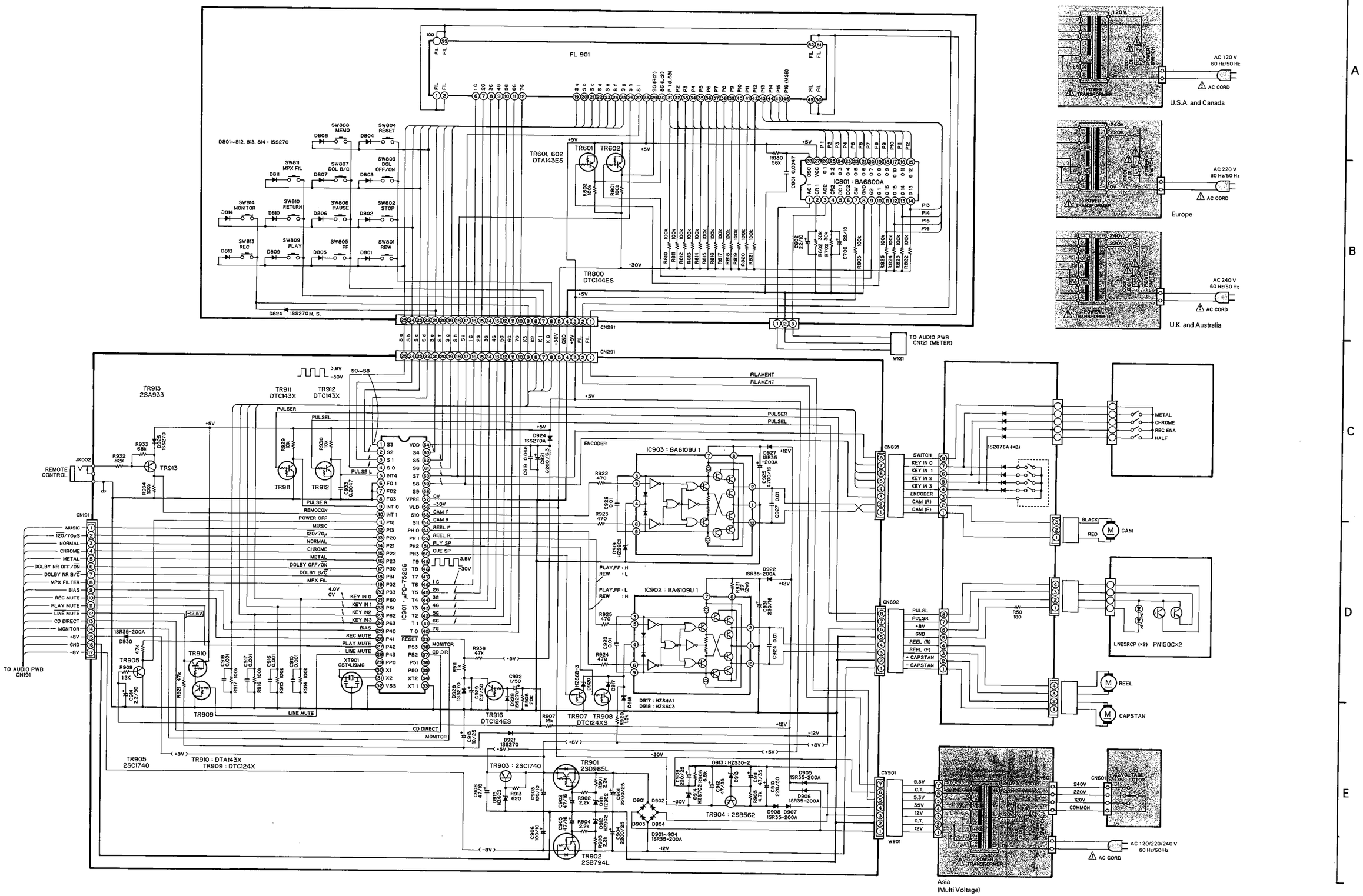
WIRING DIAGRAM



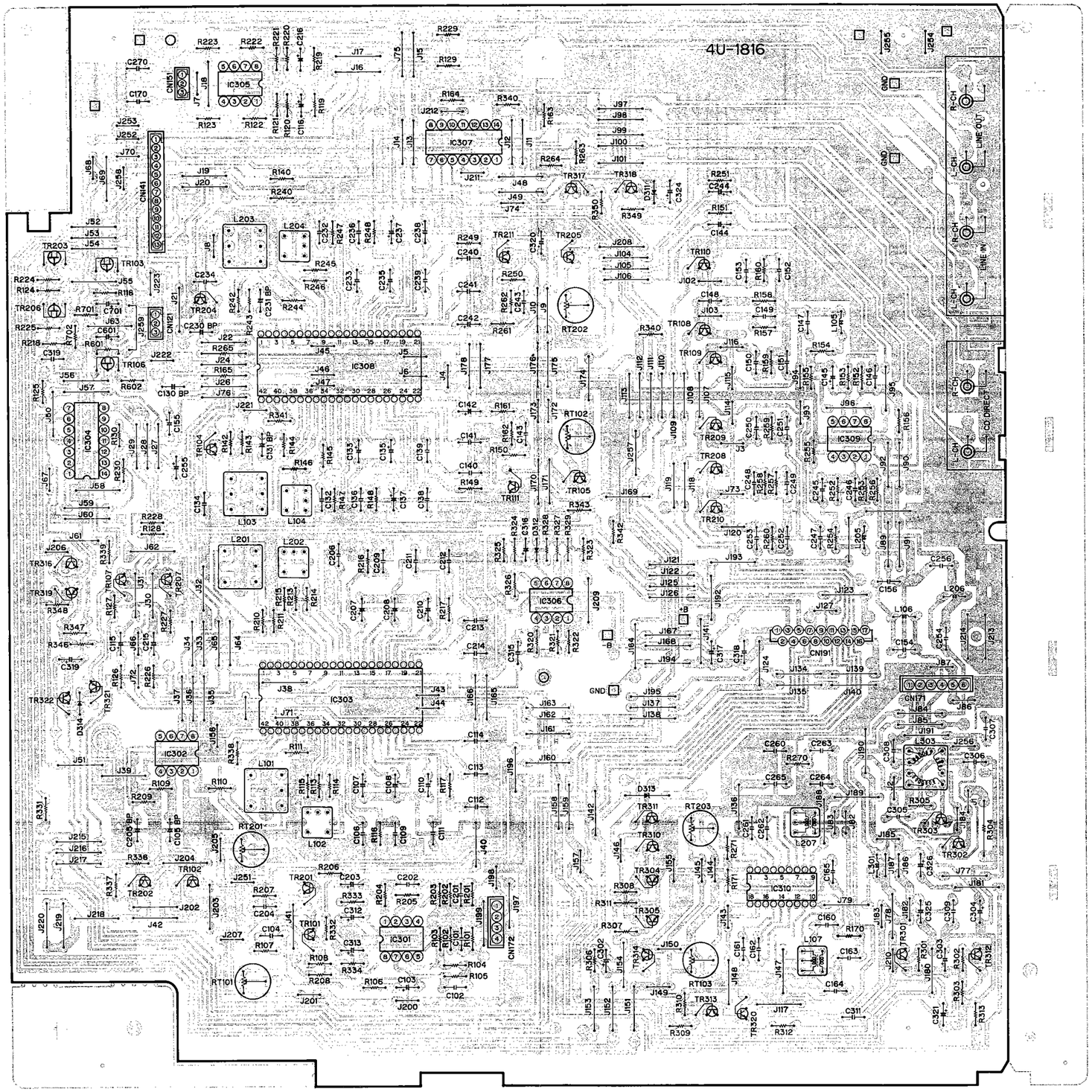
SCHEMATIC DIAGRAM OF AUDIO SECTION



SCHEMATIC DIAGRAM OF POWER & LOGIC SECTION



P.W. BOARD OF 4U-1816



P.W. BOARD

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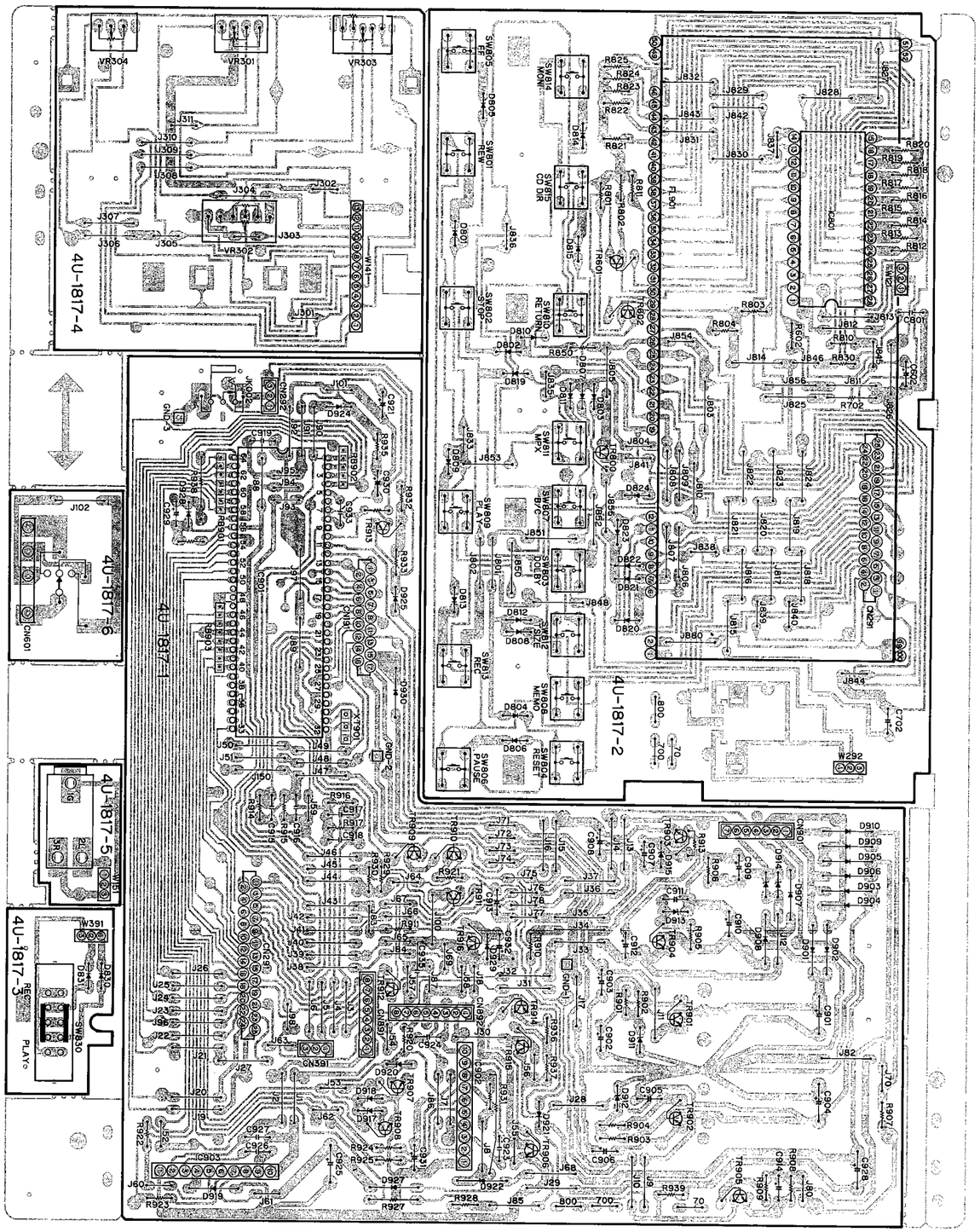

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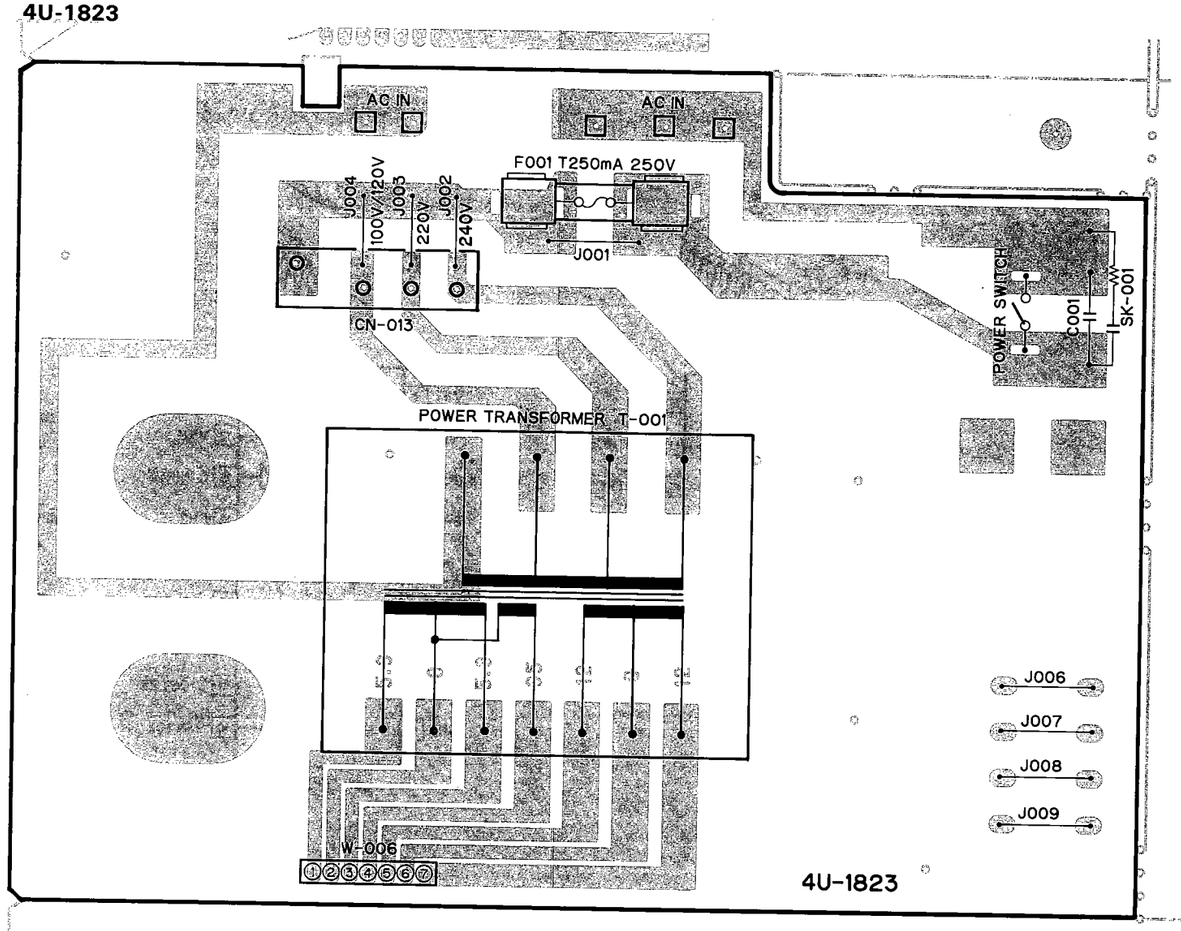

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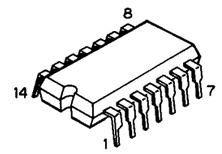

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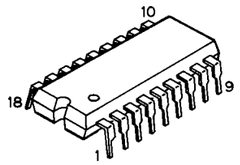

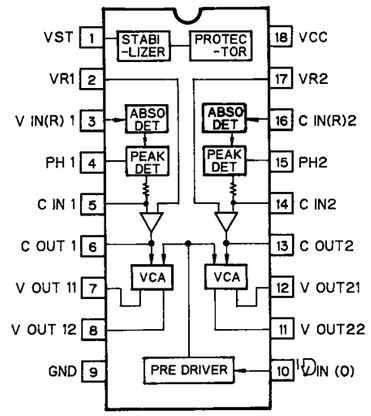

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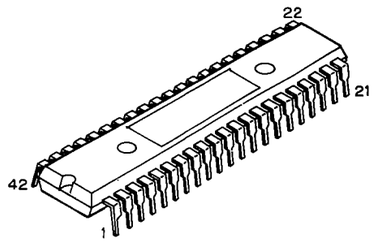

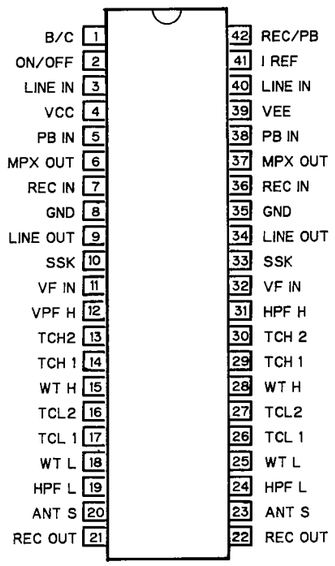

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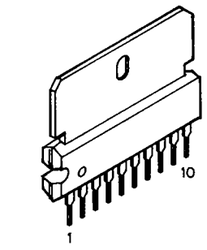

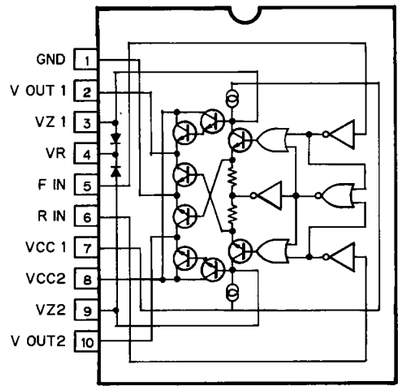

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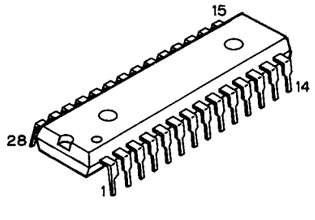

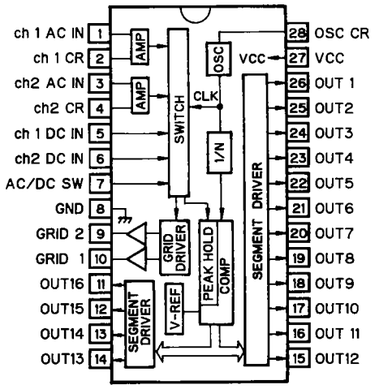

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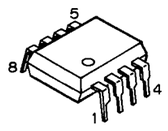

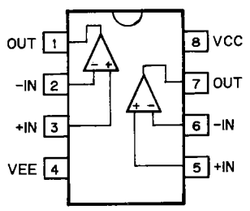

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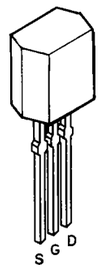

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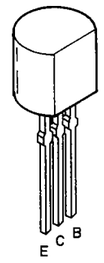

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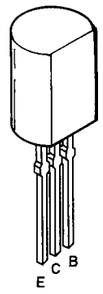

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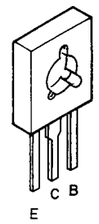

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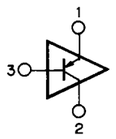

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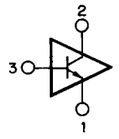

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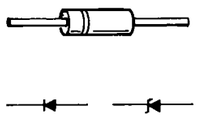

1SR35
1SS270A

HZ4A-1
HZ6C-3
HZ7C-2
HZ9C-1
HZ9C-2
HZ30-2

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